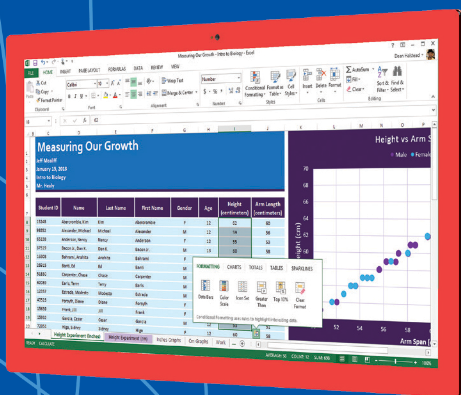
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Microsoft Excel 2013

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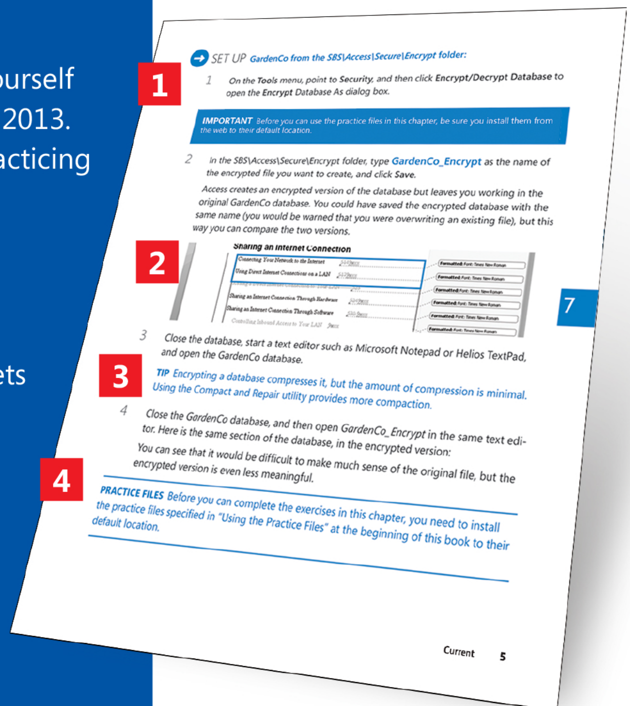
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- Identify trends by presenting your data visually
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- Perform complex analyses using PivotTables
- Use macros to automate repetitive tasks
- Collaborate and present workbooks online


SET UP GardenCo from the SBS\Access\Secure\Encrypt folder:

1 On the Tools menu, point to Security, and then click Encrypt/Decrypt Database to open the Encrypt Database As dialog box.

IMPORTANT Before you can use the practice files in this chapter, be sure you install them from the web to their default location.

2 In the SBS\Access\Secure\Encrypt folder, type GardenCo_Encrypt as the name of the encrypted file you want to create, and click Save.

Access creates an encrypted version of the database but leaves you working in the original GardenCo database. You could have saved the encrypted database with the same name (you would be warned that you were overwriting an existing file), but this way you can compare the two versions.

3 Close the database, start a text editor such as Microsoft Notepad or Helios TextPad, and open the GardenCo database.

TIP Encrypting a database compresses it, but the amount of compression is minimal. Using the Compact and Repair utility provides more compaction.

4 Close the GardenCo database, and then open GardenCo_Encrypt in the same text editor. Here is the same section of the database, in the encrypted version:

You can see that it would be difficult to make much sense of the original file, but the encrypted version is even less meaningful.

PRACTICE FILES Before you can complete the exercises in this chapter, you need to install the practice files specified in "Using the Practice Files" at the beginning of this book to their default location.

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ISBN: 978-0-7356-8101-9

U.S.A. $29.99
Canada $31.99
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Step by Step

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ISBN: 978-0-7356-8101-9

2 3 4 5 6 7 8 9 10 QG 8 7 6 5 4 3

Printed and bound in the United States of America.

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Production Editor: Melanie Yarbrough

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Technical Reviewer: Andy Pope

Indexer: Judith McConville

Cover Design: Girvin

Cover Composition: Zyg Group, LLC

Illustrator: Online Training Solutions, Inc. (OTSI)

[2013-03-28]

For Virginia.

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Introduction

Part of the Microsoft Office 2013 suite of programs, Microsoft Excel 2013 is a full-featured spreadsheet program that helps you quickly and efficiently develop dynamic, professional workbooks to summarize and present your data. *Microsoft Excel 2013 Step by Step* offers a comprehensive look at the features of Excel that most people will use most frequently.

Who this book is for

Microsoft Excel 2013 Step by Step and other books in the *Step by Step* series are designed for beginning-level to intermediate-level computer users. Examples shown in the book generally pertain to small and medium businesses but teach skills that can be used in organizations of any size. Whether you are already comfortable working in Excel and want to learn about new features in Excel 2013 or are new to Excel, this book provides invaluable hands-on experience so that you can create, modify, and share workbooks with ease.

How this book is organized

This book is divided into 14 chapters. Chapters 1–4 address basic skills such as identifying the different Excel programs, customizing the program window, setting up workbooks, managing data within workbooks, creating formulas to summarize your data, and formatting your workbooks. Chapters 5–10 show you how to analyze your data in more depth through sorting and filtering, creating alternative data sets for scenario analysis, summarizing data by using charts, and creating PivotTables and PivotCharts. Chapters 11–14 cover printing, working with macros and forms, working with other Microsoft Office programs, and collaborating with colleagues.

The first part of Chapter 1 contains introductory information that will primarily be of interest to readers who are new to Excel or are upgrading from Excel 2010 or an earlier version. If you have worked with a more recent version of Excel, you might want to skip that material.

This book has been designed to lead you step by step through all the tasks you're most likely to want to perform with Excel 2013. If you start at the beginning and work your way through all the exercises, you will gain enough proficiency to be able to create and work with most types of Excel workbooks. However, each topic is self-contained, so you can jump in anywhere to acquire exactly the skills you need.

Download the practice files

Before you can complete the exercises in this book, you need to download the book's practice files to your computer. These practice files can be downloaded from the following page:

http://www.microsoftpressstore.com/title/9780735681019

IMPORTANT The Excel 2013 program is not available from this website. You should purchase and install that program before using this book.

The following table lists the practice files for this book.

Chapter	File
Chapter 1: Getting started with Excel 2013	DataLabels.xlsx ExceptionSummary.xlsx ExceptionTracking.xlsx MisroutedPackages.xlsx PackageCounts.xlsx RouteVolume.xlsx
Chapter 2: Working with data and Excel tables	2013Q1ShipmentsByCategory.xlsx AverageDeliveries.xlsx DriverSortTimes.xlsx MailingNames.xlsx Series.xlsx ServiceLevels.xlsx
Chapter 3: Performing calculations on data	ConveyerBid.xlsx FuelSurcharges.xlsx ITExpenses.xlsx PackagingCosts.xlsx SavingsIncentive.xlsx VehicleMiles.xlsx

Chapter	File
Chapter 4: Changing workbook appearance	CallCenter.xlsx Dashboard.xlsx ExecutiveSearch.xlsx HourlyExceptions.xlsx HourlyTracking.xlsx VehicleMileSummary.xlsx
Chapter 5: Focusing on specific data by using filters	Credit.xlsx ForFollowUp.xlsx PackageExceptions.xlsx Slicers.xlsx
Chapter 6: Reordering and summarizing data	GroupByQuarter.xlsx ShipmentLog.xlsx ShippingCustom.xlsx ShippingSummary.xlsx
Chapter 7: Combining data from multiple sources	Consolidate.xlsx DailyCallSummary.xlsx FebruaryCalls.xlsx FleetOperatingCosts.xlsx JanuaryCalls.xlsx OperatingExpenseDashboard.xlsx
Chapter 8: Analyzing data and alternative data sets	2DayScenario.xlsx AdBuy.xlsx DriverSortTimes.xlsx MultipleScenarios.xlsx PackageAnalysis.xlsx RateProjections.xlsx TargetValues.xlsx
Chapter 9: Creating charts and graphics	FutureVolumes_start.xlsx MonthAndCategory_start.xlsx OrgChart_start.xlsx RevenueAnalysis_start.xlsx RevenueSummary_start.xlsx Shapes_start.xlsx VolumeByCenter_start.xlsx YearlyPackageVolume_start.xlsx

Chapter	File
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Chapter 11: Printing worksheets and charts	ConsolidatedMessenger.png CorporateRevenue.xlsx HourlyPickups.xlsx PickupsByHour.xlsx RevenueByCustomer.xlsx SummaryByCustomer.xlsx
Chapter 12: Working with macros and forms	PackageWeight.xlsm PerformanceDashboard.xlsm RunOnOpen.xlsm VolumeHighlights.xlsm YearlySalesSummary.xlsm
Chapter 13: Working with other Office programs	2013YearlyRevenueSummary.pptx Hyperlink.xlsx LevelDescriptions.xlsx RevenueByServiceLevel.xlsx RevenueChart.xlsx RevenueSummary.pptx SummaryPresentation.xlsx
Chapter 14: Collaborating with colleagues	CategoryXML.xlsx CostProjections.xlsx ExceptionTracking.xml ProjectionChangeTracking.xlsx ProjectionsDistro.xlsx ProjectionsForComment.xlsx ProjectionsSigned.xlsx SecureInfo.xlsx ShipmentSummary.xlsx SkyDriveFile.xlsx

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Getting support and giving feedback

The following sections provide information about getting help with Excel 2013 or the contents of this book and contacting us to provide feedback or report errors.

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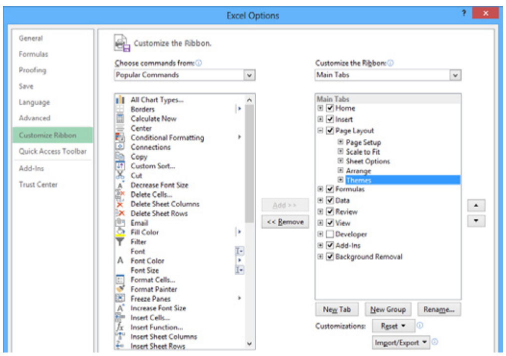
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Chapter at a glance

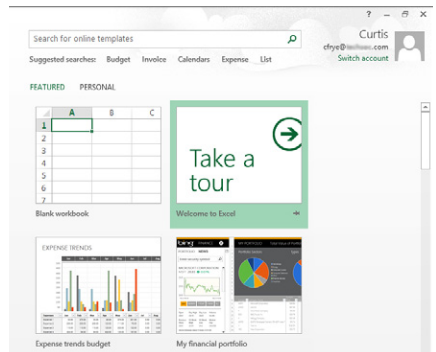
Customize

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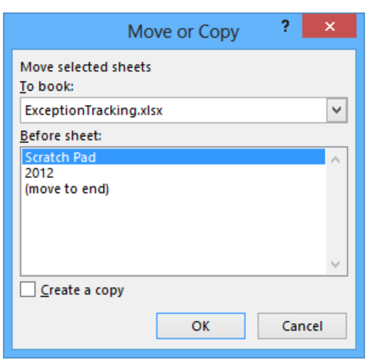
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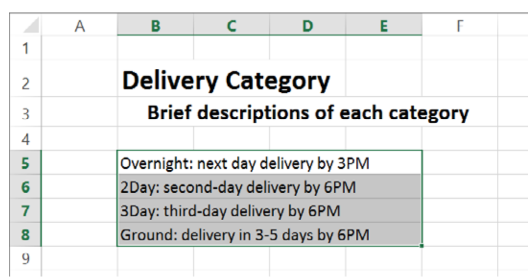
Modify

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Merge

Merge and unmerge cells, page 39



Getting started with Excel 2013

1

IN THIS CHAPTER, YOU WILL LEARN HOW TO

- Identify the different Excel 2013 programs.
- Identify new features of Excel 2013.
- Customize the Excel 2013 program window.
- Create workbooks.
- Modify workbooks.
- Modify worksheets.
- Merge and unmerge cells.

When you create a Microsoft Excel 2013 workbook, the program presents a blank workbook that contains one worksheet. You can add or delete worksheets, hide worksheets within the workbook without deleting them, and change the order of your worksheets within the workbook. You can also copy a worksheet to another workbook or move the worksheet without leaving a copy of the worksheet in the first workbook. If you and your colleagues work with a large number of documents, you can define property values to make your workbooks easier to find when you and your colleagues attempt to locate them by searching in File Explorer or by using Windows 8 Search.

TIP In Windows 8, File Explorer has replaced Windows Explorer. Throughout this book, this browsing utility is referred to by its Windows 8 name. If your computer is running Windows 7, use Windows Explorer instead.

You can also make Excel easier to use by customizing the Excel program window to fit your work style. If you have several workbooks open at the same time, you can move between the workbook windows quickly. However, if you switch between workbooks frequently, you might find it easier to resize the workbooks so they don’t take up the entire Excel window. If you do this, you can switch to the workbook that you want to modify by clicking the title bar of the workbook you want.

The Microsoft Office User Experience team has enhanced your ability to customize the Excel user interface. If you find that you use a command frequently, you can add it to the Quick Access Toolbar so it's never more than one click away. If you use a set of commands frequently, you can create a custom ribbon tab so they appear in one place. You can also hide, display, or change the order of the tabs on the ribbon.

In this chapter, you'll get an overview of the different Excel programs that are available and discover features that are available in Excel 2013. You'll also create and modify workbooks and worksheets, make workbooks easier to find, and customize the Excel 2013 program window.

PRACTICE FILES To complete the exercises in this chapter, you need the practice files contained in the Chapter01 practice file folder. For more information, see "Download the practice files" in this book's Introduction.

Identifying the different Excel 2013 programs

The Microsoft Office 2013 suite includes programs that give you the ability to create and manage every type of file you need to work effectively at home, business, or school. The programs include Microsoft Word 2013, Excel 2013, Outlook 2013, PowerPoint 2013, Access 2013, InfoPath 2013, Lync 2013, OneNote 2013, and Publisher 2013. You can purchase the programs as part of a package that includes multiple programs or purchase most of the programs individually.

With the Office 2013 programs, you can find the tools you need quickly and, because they were designed as an integrated package, you'll find that most of the skills you learn in one program transfer readily to the others. That flexibility extends well beyond your personal computer. In addition to the traditional desktop Excel program, you can also use Excel 2013 on devices with ARM chips and over the web. The following describes the different Excel 2013 programs that are available to you:

- **Microsoft Excel 2013 desktop edition** This program is installed directly on your computer. It includes all of the capabilities built into Excel 2013. You can purchase the desktop edition as part of an Office program suite, as a separate program, or as part of the Office 365 subscription package that lets you install the desktop versions of Office programs over the Internet.

TIP Office 365 is a cloud-based subscription licensing solution. Some of the Office 365 subscription levels provide access to the full Excel 2013 program, Excel Web App, or both.

- **Microsoft Excel 2013 RT** Microsoft developed an edition of Windows 8 for devices powered by an ARM processor. Devices running this edition of Windows 8, called Windows RT, come with an edition of Office 2013 named Microsoft Office 2013 RT. The Office 2013 RT program suite includes Excel, OneNote, PowerPoint, and Word.

  Excel 2013 RT takes advantage of ARM devices' touch screen capabilities by including Touch Mode. When you enable Touch Mode, the Excel 2013 RT interface changes slightly to make it easier to work with the program by tapping the screen with your finger or a stylus and by providing an on-screen keyboard through which you can enter data. You can also work with Excel 2013 RT by using a physical keyboard, a mouse, and your device's track pad.

  TIP Excel 2013 RT includes almost all of the functionality found in the Excel 2013 full desktop program; the main difference is that Excel 2013 RT does not support macros. If you open a macro-enabled workbook in Excel 2013 RT, the macros will be disabled.

- **Microsoft Excel 2013 Web App** Information workers require their data to be available to them at all times, not just when they're using their personal computers. To provide mobile workers with access to their data, Microsoft developed Office Web Apps, which include online versions of Excel, Word, PowerPoint, and OneNote. Office Web Apps are available as part of an Office 365 subscription or for free as part of the Microsoft SkyDrive cloud service.

  You can use Excel Web App to edit files stored in your SkyDrive account or on a Microsoft SharePoint site. Excel Web App displays your Excel 2010 and Excel 2013 files as they appear in the desktop program and includes all of the functions you use to summarize your data. You can also view and manipulate (but not create) PivotTables, add charts, and format your data to communicate its meaning clearly.

  Excel Web App also includes the capabilities to share your workbooks online, to embed them as part of another webpage, and to create web-accessible surveys that save user responses directly to an Excel workbook in your SkyDrive account.

  After you open a file by using Excel Web App, you can choose to continue editing the file in your browser (such as Windows Internet Explorer 10) or open the file in the desktop program. When you open the file in your desktop program, any changes you save are written to the version of the file on your SkyDrive account. This practice means that you will always have access to the most recent version of your file, regardless of where and how you access it.

- **Microsoft Excel Mobile** If you have a Windows Phone 8 device, you can use Excel Mobile to view and manipulate your workbooks. You can create formulas, change the formatting of worksheet cells, sort and filter your data, and summarize your data by using charts. You can also connect your phone to your SkyDrive account, so all of those files will be available even if you don't have a notebook or other computer to work with at the moment.

Identifying new features of Excel 2013

Excel 2013 includes all of the most useful capabilities included in previous versions of the program. If you've used an earlier version of Excel, you probably want to know about the new features introduced in Excel 2013. The following sections summarize the most important changes from Excel 2010, Excel 2007, and Excel 2003.

If you are upgrading from Excel 2010

For users of Excel 2010, you'll find that Excel 2013 extends the program's existing capabilities and adds some very useful new ones. The features introduced in Excel 2013 include:

- **Windows 8 functionality** Excel 2013, like all Office 2013 programs, takes full advantage of the capabilities of the Windows 8 operating system. When it is running on a computer running Windows 8, Excel embodies the new presentation elements and enables you to use a touch interface to interact with your data.
- **A window for each workbook** Every workbook now has its own program window.
- **New functions** More than 50 new functions are available, which you can use to summarize your data, handle errors in your formulas, and bring in data from online resources.
- **Flash Fill** If your data is in list form, you can combine, extract, or format the data in a cell. When you continue the operation, Excel detects your pattern and offers to extend it for every row in the list.
- **Quick Analysis Lens** Clicking the Quick Analysis action button, which appears next to a selected cell range, displays different ways to visually represent your data. Clicking an icon creates the analysis instantly.
- **Recommended PivotTable** PivotTables create interactive and flexible data summaries. You can have Excel recommend a series of PivotTables to create from your data, click the one you want, and keep working.

- **Recommended Charts** As with Recommended PivotTables, Excel recommends the most suitable charts based on patterns in your data. You can display the suggested charts, click the one you want, and modify it so it's perfect.
- **Chart formatting control** You can fine-tune your charts quickly and easily. Change the title, layout, or other elements of your charts from a new and interactive interface.
- **Chart animations** When you change the underlying data in a chart, Excel updates your chart and highlights the change by using an animation.
- **Cloud capability** You can now share workbooks stored online or post part of a workbook to your social network by posting a link to the file.
- **Online presentation capability** You can share your workbook and collaborate in real time with others as part of a Microsoft Lync conversation or meeting. You can also allow others to take control of your workbook during the conversation or meeting.

If you are upgrading from Excel 2007

In addition to the features added in Excel 2013, the Excel programming team introduced the following features in Excel 2010:

- **Manage Excel files and settings in the Backstage view** When the User Experience and Excel teams focused on the Excel 2007 user interface, they discovered that several workbook management tasks that contained content-related tasks were sprinkled among the ribbon tabs. The Excel team moved all of the workbook management tasks to the Backstage view, which users can access by clicking the File tab.
- **Preview data by using Paste Preview** With this feature, you can preview how your data will appear in the worksheet before you commit to the paste.
- **Customize the Excel 2010 user interface** The ability to make simple modifications to the Quick Access Toolbar has been broadened to include many more options for changing the ribbon interface. You can hide or display built-in ribbon tabs, change the order of built-in ribbon tabs, add custom groups to a ribbon tab, and create custom ribbon tabs, which can also contain custom groups.
- **Summarize data by using more accurate functions** In earlier versions of Excel, the program contained statistical, scientific, engineering, and financial functions that would return inaccurate results in some relatively rare circumstances. The Excel programming team identified the functions that returned inaccurate results and collaborated with academic and industry analysts to improve the functions' accuracy.

- **Summarize data by using sparklines** In his book *Beautiful Evidence* (Graphics Press), Edward Tufte describes sparklines as "intense, simple, wordlike graphics." Sparklines take the form of small charts that summarize data in a single cell. These small but powerful additions to Excel 2010 and Excel 2013 enhance the program's reporting and summary capabilities.
- **Filter PivotTable data by using slicers** Slicers visually indicate which values appear in a PivotTable and which are hidden. They are particularly useful when you are presenting data to an audience that contains visual thinkers who might not be skilled at working with numerical values.
- **Filter PivotTable data by using search filters** Excel 2007 introduced several new ways to filter PivotTables. These filtering capabilities have been extended with the introduction of search filters. With a search filter, you begin entering a sequence of characters that occur in the term (or terms) by which you want to filter. As you enter these characters, the filter list of the PivotTable field displays only those terms that reflect the values entered into the search filter box.
- **Visualize data by using improved conditional formats** The Excel programming team greatly extended the capabilities of the data bar and icon set conditional formats introduced in Excel 2007. The team also enabled you to create conditional formats that refer to cells on worksheets other than the one on which you're defining the format.
- **Create and display math equations** With the updated equation designer, you can create any equation you require. The editor has several common equations built in, such as the quadratic formula and the Pythagorean theorem, but it also contains numerous templates that you can use to create custom equations quickly.
- **Edit pictures within Excel 2010** One very helpful capability is the ability to remove the background elements of an image. Removing an image's background enables you to create a composite image in which the foreground elements are placed in front of another background. For example, you can focus on a flower's bloom and remove most of the leaves and stem from the photo. After you isolate the foreground image, you can place the bloom in front of another background.

If you are upgrading from Excel 2003

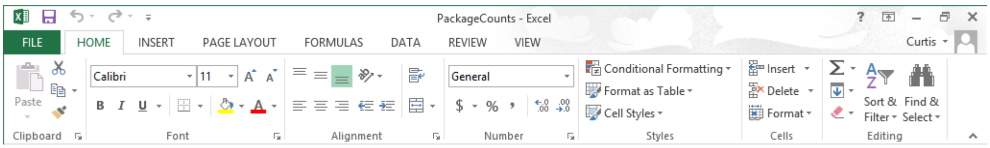
In addition to the changes in Excel 2010 and Excel 2013, users upgrading from Excel 2003 will notice several more significant changes:

- **The ribbon** Unlike in previous versions of Excel, in which you hunted through a complex toolbar and menu system to find the commands you wanted, you can use the ribbon user interface to find everything you need at the top of the program window.
- **Larger data collection capability** The larger worksheet includes more than 1 million rows and 16,000 columns.
- **New file format** The Excel file format (.xlsx) uses XML and file compression techniques to reduce the size of a typical file by 50 percent.
- **Expanded cell and worksheet formatting** Vast improvements have been made to the color management and formatting options found in previous versions of the program. You can have as many different colors in a workbook as you like, for example, and you can assign a design theme to a workbook.
- **Excel tables** These enable you to enter and summarize your data efficiently. If you want to enter data in a new table row, all you have to do is enter the data in the row below the table. When you press Tab or Enter after entering the last cell's values, Excel expands the table to include your new data. You can also have Excel display a Totals row, which summarizes your table's data by using a function that you specify.
- **Improved charting** With the charting engine, you can create more attractive charts.
- **Formula AutoComplete** When you enter formulas into an Excel worksheet cell, the program displays a list of options from which you can choose for each formula element, greatly accelerating formula entry.
- **Additional formulas** With the added formulas, such as AVERAGEIFS, users can summarize data conditionally.
- **Conditional formatting** With conditional formats, users can create data bars and color scales, assign icon sets to values, assign multiple conditional formats to a cell, and assign more than three conditional formatting rules to a cell.

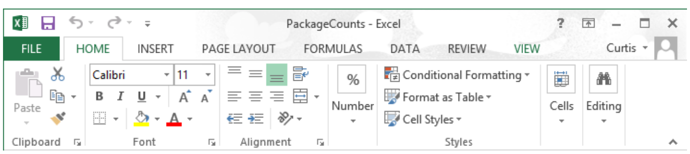
Working with the ribbon

As with all Office 2013 programs, the Excel ribbon is dynamic, meaning that as its width changes, its buttons adapt to the available space. As a result, a button might be large or small, it might or might not have a label, or it might even be an entry in a list.

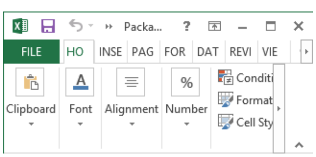
For example, when sufficient horizontal space is available, the buttons on the Home tab are spread out, and the available commands in each group are visible.



If you decrease the horizontal space available to the ribbon, small button labels disappear and entire groups of buttons might hide under one button that represents the entire group. Clicking the group button displays a list of the commands available in that group.



When the ribbon becomes too narrow to display all the groups, a scroll arrow appears at its right end. Clicking the scroll arrow displays the hidden groups.



The width of the ribbon depends on three factors:

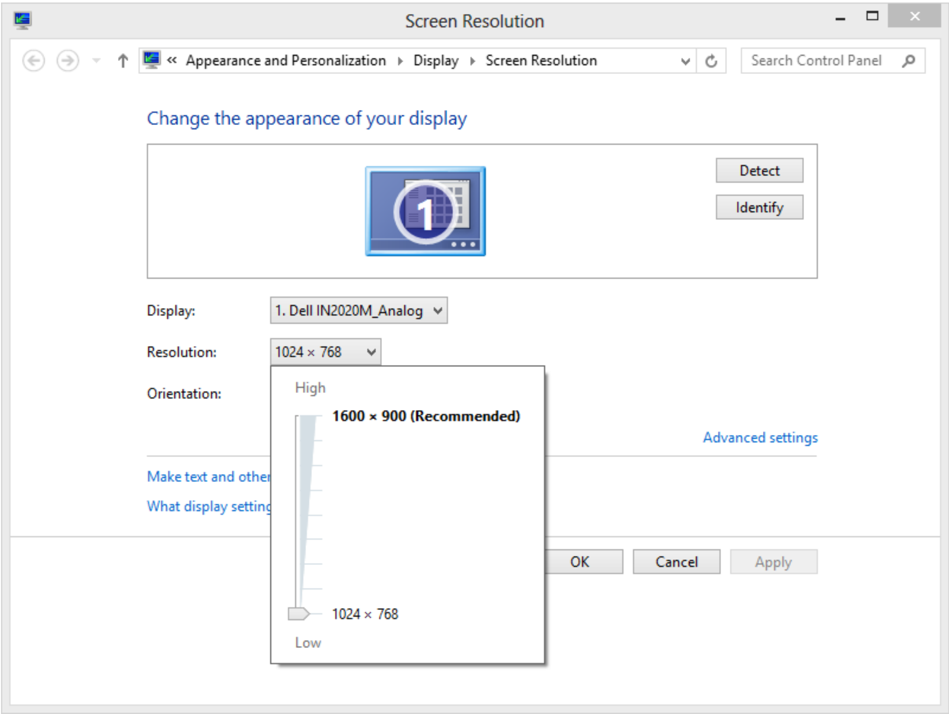
- **Program window width** Maximizing the program window provides the most space for the ribbon. To maximize the window, click the **Maximize** button, drag the borders of a nonmaximized window, or drag the window to the top of the screen.

- **Screen resolution** Screen resolution is the size of your screen display expressed as pixels wide × pixels high. Your screen resolution options are dependent on the display adapter installed in your computer, and on your monitor. Common screen resolutions range from 800 × 600 to 2560 × 1600. The greater the number of pixels wide (the first number), the greater the number of buttons that can be shown on the ribbon.

  To change your screen resolution:

  1 Display the **Screen Resolution** control panel item in one of the following ways:
     - Right-click the Windows desktop, and then click **Screen Resolution**.
     - Enter screen resolution in Windows 8 Search, and then click **Adjust screen resolution** in the **Settings** results.
     - Open the **Display** control panel item, and then click **Adjust resolution**.

  2 On the **Screen Resolution** page, click the **Resolution** arrow, click or drag to select the screen resolution you want, and then click **Apply** or **OK**.

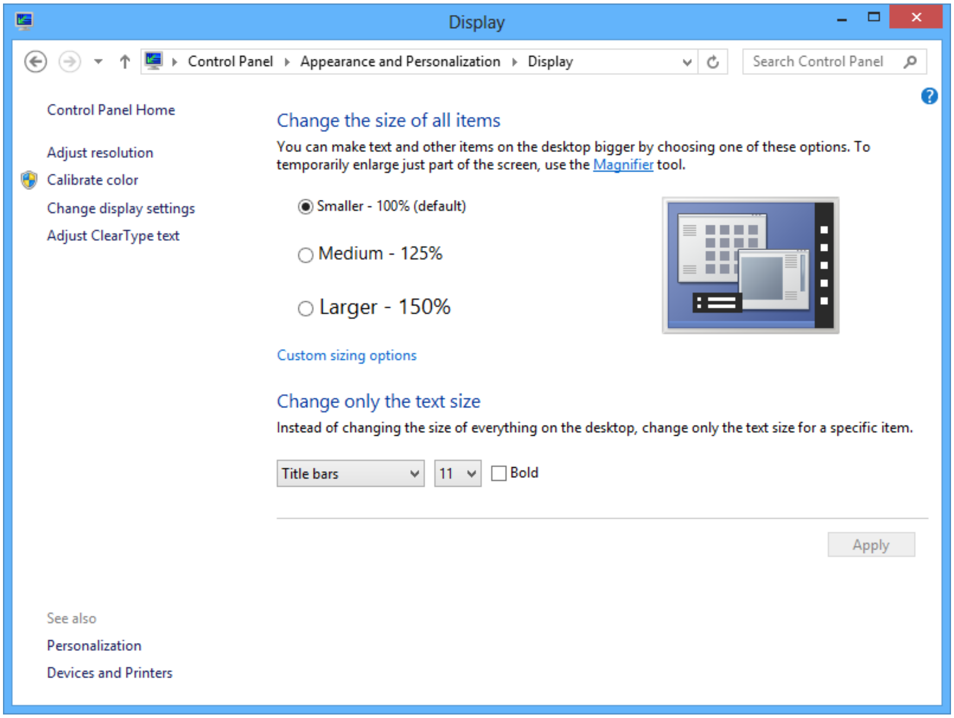


1

- **The magnification of your screen display** If you change the screen magnification setting in Windows, text and user interface elements are larger and therefore more legible, but fewer elements fit on the screen. You can set the magnification from 100 to 500 percent.

  You can change the screen magnification from the Display page of the Appearance And Personalization control panel item. You can display the Display page directly from Control Panel or by using one of the following methods:

  - Right-click the Windows desktop, click **Personalize**, and then in the lower-left corner of the **Personalization** window, click **Display**.
  - Enter **display** in Windows 8 Search, and then click **Display** in the **Settings** results.



  To change the screen magnification to 125 percent or 150 percent, click that option on the Display page. To select another magnification, click the Custom Sizing Options link and then, in the Custom Sizing Options dialog box, click the magnification you want in the drop-down list or drag the ruler to change the magnification even more.

  After you click OK in the Custom Sizing Options dialog box, the custom magnification is shown on the Display page along with any warnings about possible problems with selecting that magnification. Click Apply on the Display page to apply the selected magnification.

Customizing the Excel 2013 program window

1

How you use Excel 2013 depends on your personal working style and the type of data collections you manage. The Excel product team interviews customers, observes how differing organizations use the program, and sets up the user interface so that many users won't need to change it to work effectively. If you do want to change the program window, including the user interface, you can. You can change how Excel displays your worksheets; zoom in on worksheet data; add frequently used commands to the Quick Access Toolbar; hide, display, and reorder ribbon tabs; and create custom tabs to make groups of commands readily accessible.

Zooming in on a worksheet

One way to make Excel easier to work with is to change the program's zoom level. Just as you can "zoom in" with a camera to increase the size of an object in the camera's viewer, you can use the zoom setting to change the size of objects within the Excel program window. For example, if Peter Villadsen, the Consolidated Messenger European Distribution Center Manager, displayed a worksheet that summarized his distribution center's package volume by month, he could click the View tab and then, in the Zoom group, click the Zoom button to open the Zoom dialog box. The Zoom dialog box contains controls that he can use to select a preset magnification level or to enter a custom magnification level. He could also use the Zoom control in the lower-right corner of the Excel window.



Clicking the Zoom In control increases the size of items in the program window by 10 percent, whereas clicking the Zoom Out control decreases the size of items in the program window by 10 percent. If you want more fine-grained control of your zoom level, you can use the slider control to select a specific zoom level or click the magnification level indicator, which indicates the zoom percentage, and use the Zoom dialog box to set a custom magnification level.

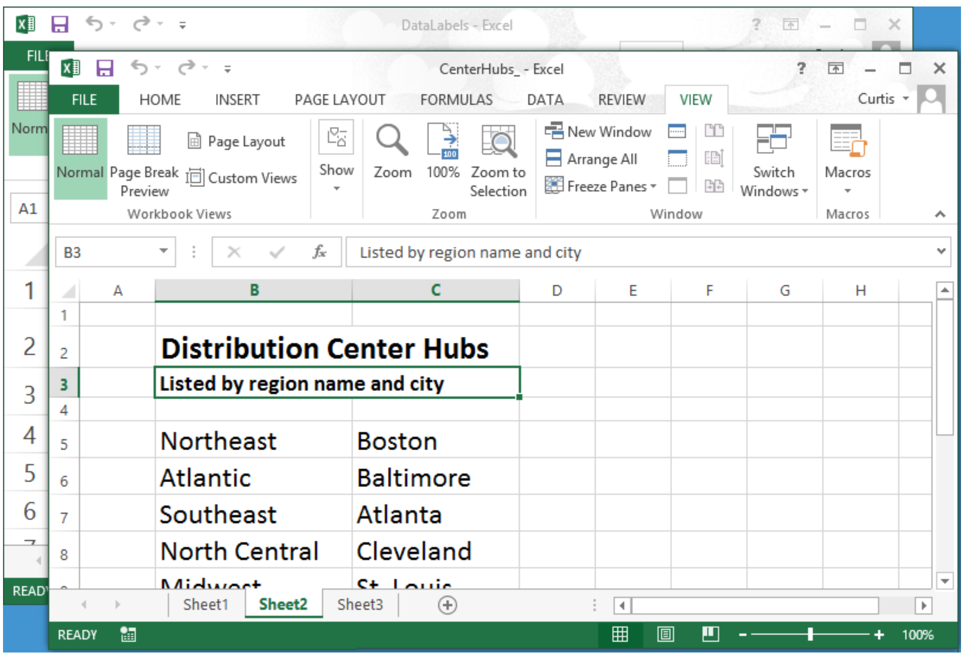
The Zoom group on the View tab contains the Zoom To Selection button, which fills the program window with the contents of any selected cells, up to the program's maximum zoom level of 400 percent.

TIP The minimum zoom level in Excel is 10 percent.

Arranging multiple workbook windows

As you work with Excel, you will probably need to have more than one workbook open at a time. For example, you could open a workbook that contains customer contact information and copy it into another workbook to be used as the source data for a mass mailing you create in Word. When you have multiple workbooks open simultaneously, you can switch between them by clicking the View tab and then, in the Window group, clicking the Switch Windows button and clicking the name of the workbook you want to view.

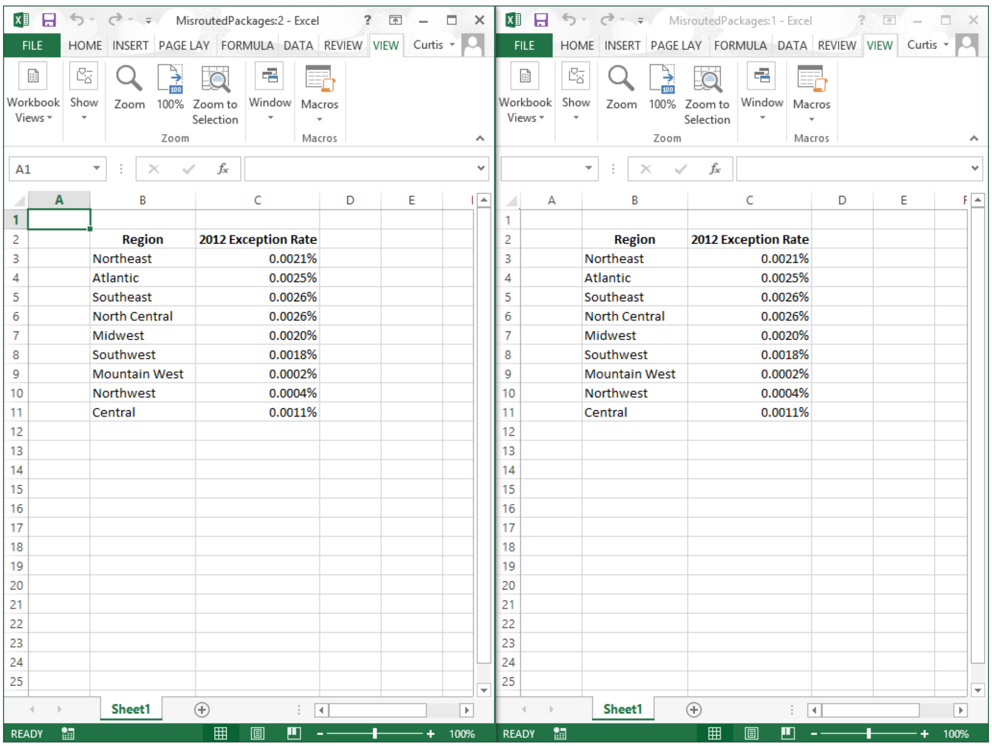
You can arrange your workbooks on the desktop so that most of the active workbook is shown but the others are easily accessible. To do so, click the View tab and then, in the Window group, click the Arrange All button. Then, in the Arrange Windows dialog box, click Cascade.



Many Excel workbooks contain formulas on one worksheet that derive their value from data on another worksheet, which means you need to change between two worksheets every time you want to test how modifying your data changes the formula's result. However, an easier way to approach this is to display two copies of the same workbook simultaneously,

displaying the worksheet that contains the data in the original window and displaying the worksheet with the formula in the new window. When you change the data in either copy of the workbook, Excel updates the other copy. To display two copies of the same workbook, open the workbook and then, on the View tab, in the Window group, click New Window to opens a second copy of the workbook. To display the workbooks side by side, on the View tab, click Arrange All. Then, in the Arrange Windows dialog box, click Vertical and then click OK.

If the original workbook's name is MisroutedPackages, Excel displays the name MisroutedPackages:1 on the original workbook's title bar and MisroutedPackages:2 on the second workbook's title bar.



TROUBLESHOOTING If the controls in the Window group on the View tab don't affect your workbooks as you expect, you might have a program, such as SkyDrive for PC, open in the background that prevents those capabilities from functioning.

Adapting exercise steps

The screen shots shown in this book were captured at a screen resolution of 1024 × 768, at 100-percent magnification. If your settings are different, the ribbon on your screen might not look the same as the one shown in this book. As a result, exercise instructions that involve the ribbon might require a little adaptation. This book's instructions use this format:

- On the **Insert** tab, in the **Illustrations** group, click the **Chart** button.

If the command is in a list, the instructions use this format:

- On the **Home** tab, in the **Editing** group, click the **Find** arrow and then, in the **Find** list, click **Go To**.

If your display settings cause a button to appear differently on your screen than it does in this book, you can easily adapt the steps to locate the command. First click the specified tab, and then locate the specified group. If a group has been collapsed into a group list or under a group button, click the list or button to display the group's commands. If you can't immediately identify the button you want, point to likely candidates to display their names in ScreenTips.

This book provides instructions based on traditional keyboard and mouse input methods. If you're using Excel on a touch-enabled device, you might be giving commands by tapping with your finger or with a stylus. If so, substitute a tapping action any time the instructions ask you to click a user interface element. Also note that when the instructions ask you to enter information in Excel, you can do so by typing on a keyboard, tapping in the entry field under discussion to display and use the on-screen keyboard, or even speaking aloud, depending on your computer setup and your personal preferences.

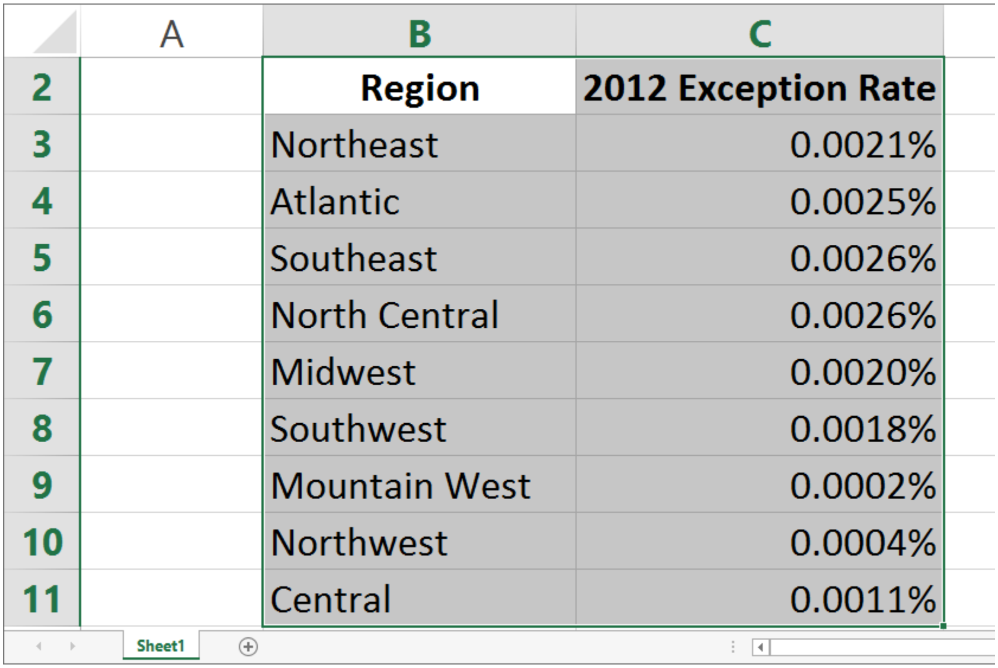
In this exercise, you'll change a worksheet's zoom level, zoom to maximize the display of a selected cell range, switch between workbooks, and arrange all open workbooks on your screen.

SET UP **You need the PackageCounts and MisroutedPackages workbooks located in the Chapter01 practice file folder to complete this exercise. Open both workbooks, and then follow the steps.**

1. In the **MisroutedPackages** workbook, in the lower-right corner of the Excel window, click the **Zoom In** control five times to change the worksheet's zoom level to **150%**.

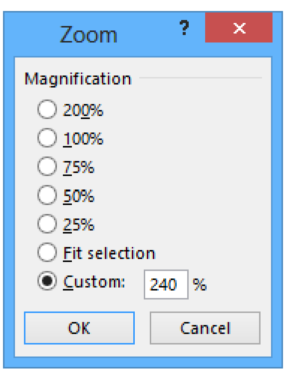
2 Select cells **B2:C11**.

3 On the **View** tab, in the **Zoom** group, click the **Zoom to Selection** button to display the selected cells so that they fill the program window.



	A	B	C
2		Region	2012 Exception Rate
3		Northeast	0.0021%
4		Atlantic	0.0025%
5		Southeast	0.0026%
6		North Central	0.0026%
7		Midwest	0.0020%
8		Southwest	0.0018%
9		Mountain West	0.0002%
10		Northwest	0.0004%
11		Central	0.0011%

4 On the **View** tab, in the **Zoom** group, click the **Zoom** button to open the **Zoom** dialog box.

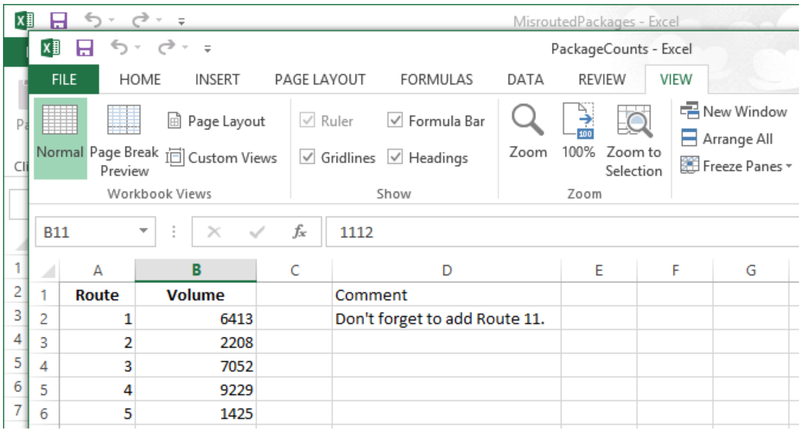


5 Click **100%**, and then click **OK** to return the worksheet to its default zoom level.

6 On the **View** tab, in the **Window** group, click the **Switch Windows** button, and then click **PackageCounts** to display the **PackageCounts** workbook.

7 On the **View** tab, in the **Window** group, click the **Arrange All** button to open the **Arrange Windows** dialog box.

8 Click **Cascade**, and then click **OK** to cascade the open workbook windows.



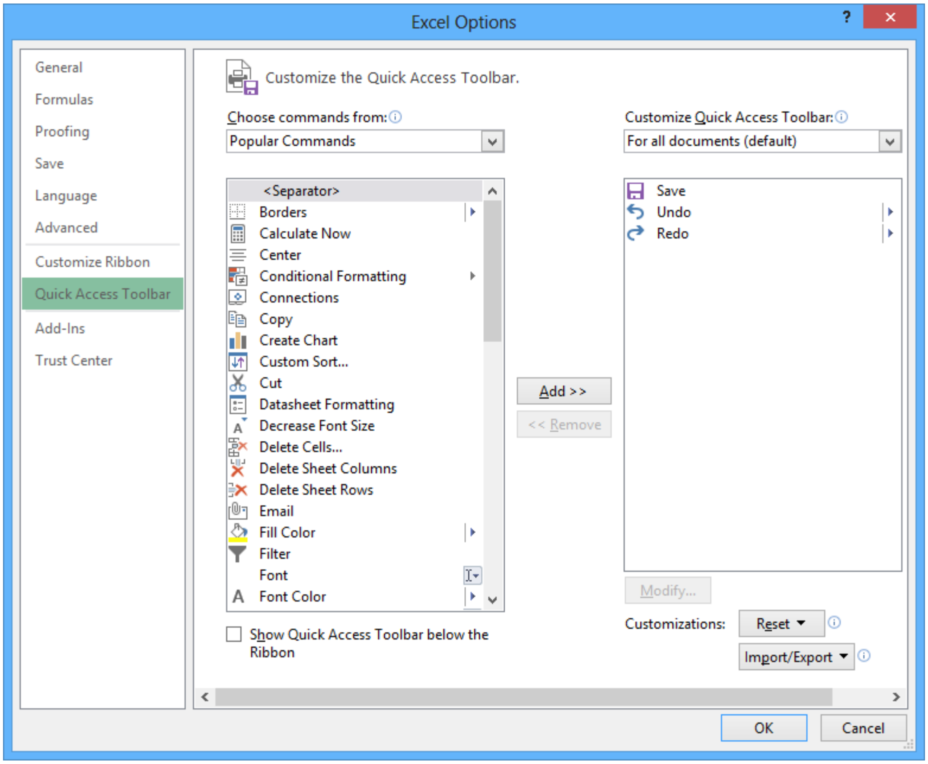
CLEAN UP **Close the PackageCounts and MisroutedPackages workbooks, saving your changes if you want to.**

Adding buttons to the Quick Access Toolbar

As you continue to work with Excel 2013, you might discover that you use certain commands much more frequently than others. If your workbooks draw data from external sources, for example, you might find yourself displaying the Data tab and then, in the Connections group, clicking the Refresh All button much more often than the program's designers might have expected. You can make any button accessible with one click by adding the button to the Quick Access Toolbar, located just above the ribbon in the upper-left corner of the Excel program window.

To add a button to the Quick Access Toolbar, click the File tab to display the Backstage view, and then click Options in the left pane. In the Excel Options dialog box, display the Customize The Quick Access Toolbar page. This page contains two panes. The pane on the left lists all of the controls that are available within a specified category, and the pane on the right lists the controls currently displayed on the Quick Access Toolbar. To add a command to the Quick Access Toolbar, in the Choose Commands From list, click the category that contains the control you want to add. Excel displays the available commands in the

pane below the Choose Commands From field. Click the control you want, and then click the Add button.



You can change a button's position on the Quick Access Toolbar by clicking its name in the right pane and then clicking either the Move Up or Move Down button at the right edge of the dialog box. To remove a button from the Quick Access Toolbar, click the button's name in the right pane, and then click the Remove button. When you're done making your changes, click the OK button. If you prefer not to save your changes, click the Cancel button. If you saved your changes but want to return the Quick Access Toolbar to its original state, click the Reset button and then click either Reset Only Quick Access Toolbar, which removes any changes you made to the Quick Access Toolbar, or Reset All Customizations, which returns the entire ribbon interface to its original state.

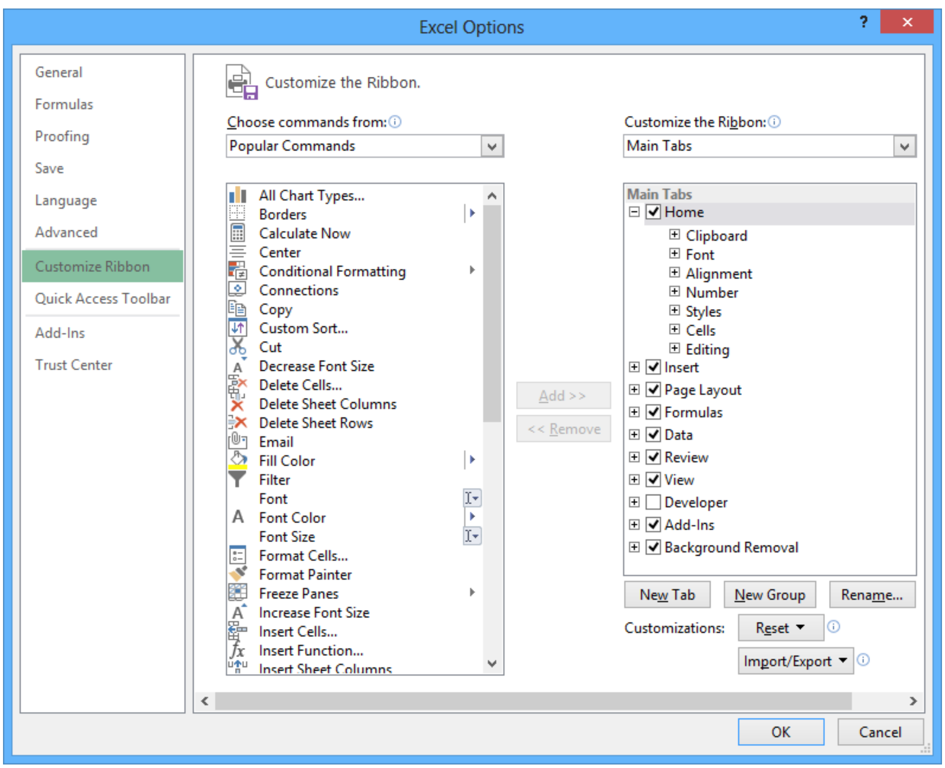
You can also choose whether your Quick Access Toolbar changes affect all your workbooks or just the active workbook. To control how Excel applies your change, in the Customize Quick Access Toolbar list, click either For All Documents to apply the change to all of your workbooks or For Workbook to apply the change to the active workbook only.

If you'd like to export your Quick Access Toolbar customizations to a file that can be used to apply those changes to another Excel 2013 installation, click the Import/Export button and then click Export All Customizations. Use the controls in the dialog box that opens to save your file. When you're ready to apply saved customizations to Excel, click the Import/Export button, click Import Customization File, select the file in the File Open dialog box, and click Open.

Customizing the ribbon

Excel enhances your ability to customize the entire ribbon by enabling you to hide and display ribbon tabs, reorder tabs displayed on the ribbon, customize existing tabs (including tool tabs, which appear when specific items are selected), and create custom tabs.

To begin customizing the ribbon, display the Backstage view and then click Options. In the Excel Options dialog box, click Customize Ribbon to display the Customize The Ribbon page.

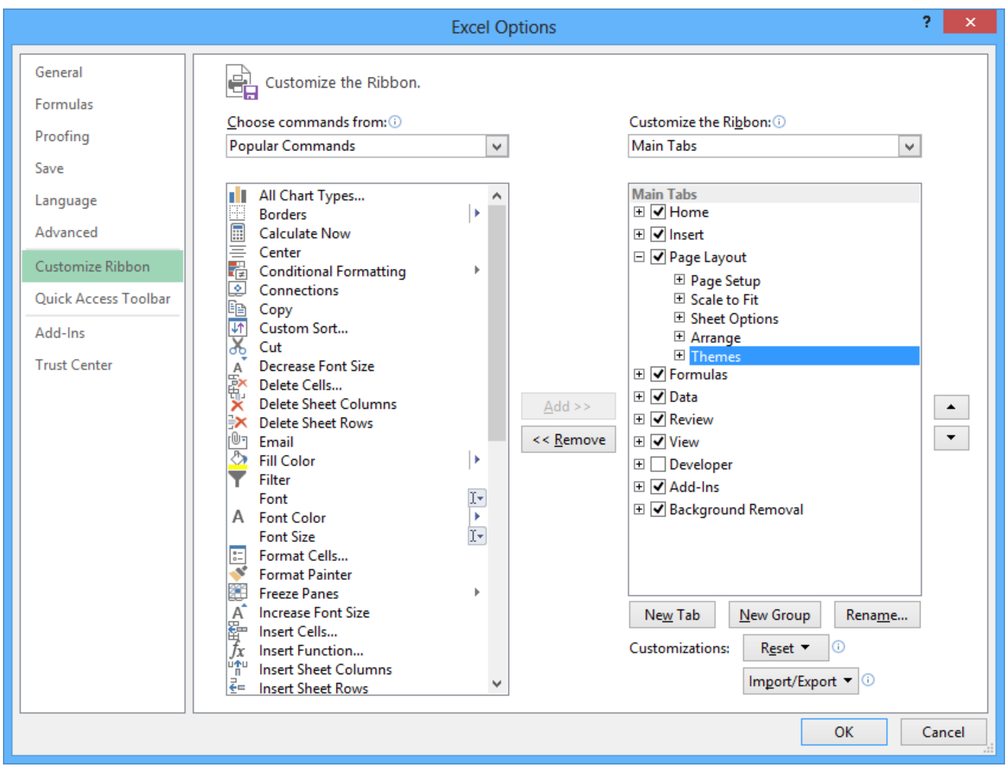


To select which tabs appear in the tabs pane on the right side of the screen, click the Customize The Ribbon field's arrow and then click either Main Tabs, which displays the tabs that can appear on the standard ribbon; Tool Tabs, which displays the tabs that appear when you click an item such as a drawing object or PivotTable; or All Tabs.

TIP The procedures taught in this section apply to both the main tabs and the tool tabs.

Each tab's name has a check box next to it. If a tab's check box is selected, then that tab appears on the ribbon. You can hide a tab by clearing the check box and bring the tab back by selecting the check box. You can also change the order in which the tabs are displayed on the ribbon. To do so, click the name of the tab you want to move and then click the Move Up or Move Down arrow to reposition the selected tab.

Just as you can change the order of the tabs on the ribbon, you can change the order in which groups of commands appear on a tab. For example, the Page Layout tab contains five groups: Themes, Page Setup, Scale To Fit, Sheet Options, and Arrange. If you use the Themes group less frequently than the other groups, you could move the group to the right end of the tab by clicking the group's name and then clicking the Move Down button until the group appears in the position you want.



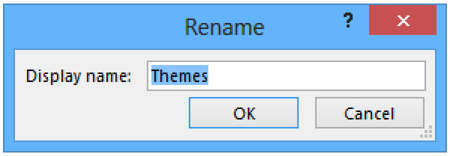
To remove a group from a built-in tab, click the name of the group in the right pane and click the Remove button. If you remove a group from a built-in tab and later decide you want to put it back on the tab, display the tab in the right pane. Then, click the Choose Commands From field's arrow and click Main Tabs. With the tab displayed, in the left pane, click the expand control (which looks like a plus sign) next to the name of the tab that contains the group you want to add back. You can now click the name of the group in the left pane and click the Add button to put the group back on the selected tab.

The built-in tabs are designed efficiently, so adding new command groups might crowd the other items on the tab and make those controls harder to find. Rather than adding controls to an existing tab, you can create a custom tab and then add groups and commands to it. To create a custom tab, click the New Tab button on the Customize The Ribbon page of the Excel Options dialog box. When you do, a new tab named New Tab (Custom), which contains a group named New Group (Custom), appears in the tab list.

You can add an existing group to your new tab by clicking the Choose Commands From field's arrow, selecting a collection of commands, clicking the group you want to add, and then clicking the Add button. You can also add individual commands to your tab by clicking a command in the command list and clicking the Add button. To add a command to your tab's custom group, click the new group in the right tab list, click the command in the left list, and then click the Add button. If you want to add another custom group to your new tab, click the new tab, or any of the groups within that tab, and then click New Group.

TIP You can change the order of the groups and commands on your custom ribbon tabs by using the techniques described earlier in this section.

The New Tab (Custom) name doesn't tell you anything about the commands on your new tab, so you can rename it to reflect its contents. To rename any tab on the ribbon, display the Customize The Ribbon page of the Excel Options dialog box, click the tab you want to modify, and then click the Rename button. Enter the tab's new name in the Rename dialog box, and click OK. To rename any group on the ribbon, click the name of the group, and then click Rename. When you do, the Rename dialog box appears. Enter a new name for the group in the Display Name box and click OK.



If you'd like to export your ribbon customizations to a file that can be used to apply those changes to another Excel 2013 installation, click the Import/Export button and then click Export All Customizations. Use the controls in the dialog box that opens to save your file. When you're ready to apply saved customizations to Excel, click the Import/Export button, click Import Customization File, select the file in the File Open dialog box, and click Open.

When you're done customizing the ribbon, click the OK button to save your changes or click Cancel to keep the user interface as it was before you started this round of changes. You can also change a tab, or the entire ribbon, back to the state it was in when you installed Excel. To restore a single tab, click the tab you want to restore, click the Reset button, and then click Reset Only Selected Ribbon Tab. To restore the entire ribbon, including the Quick Access Toolbar, click the Reset button and then click Reset All Customizations.

Maximizing usable space in the program window

You can increase the amount of space available inside the program window by hiding the ribbon, the formula bar, or the row and column labels.

To hide the ribbon, double-click the active tab label. The tab labels remain visible at the top of the program window, but the tab content is hidden. To temporarily redisplay the ribbon, click the tab label you want. Then click any button on the tab, or click away from the tab, to rehide it. To permanently redisplay the ribbon, double-click any tab label.

KEYBOARD SHORTCUT Press Ctrl+F1 to hide and unhide the ribbon. For a complete list of keyboard shortcuts, see "Keyboard shortcuts" at the end of this book.

To hide the formula bar, clear the Formula Bar check box in the Show/Hide group on the View tab. To hide the row and column labels, clear the Headings check box in the Show/Hide group on the View tab.

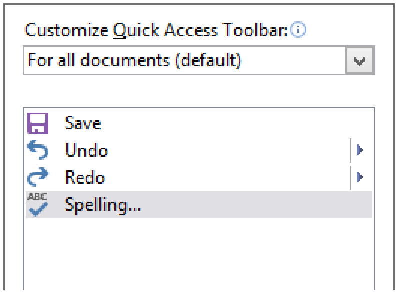
In this exercise, you'll add a button to the Quick Access Toolbar and customize the ribbon.

SET UP **You need the PackageCounts workbook located in the Chapter01 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. Click the **File** tab to display the **Backstage** view, and then click **Options** to open the **Excel Options** dialog box.
2. Click **Quick Access Toolbar** to display the **Customize The Quick Access Toolbar** page.

3 Click the **Choose commands from** arrow, and then in the list, click **Review Tab** to display the commands in the **Review Tab** category in the command list.

4 Click the **Spelling** command, and then click **Add** to add the **Spelling** command to the **Quick Access Toolbar**.



5 Click **Customize Ribbon** to display the **Customize The Ribbon** page of the **Excel Options** dialog box.

6 If necessary, click the **Customize the Ribbon** box's arrow and click **Main Tabs**. In the right tab list, click the **Review** tab and then click the **Move Up** button three times to move the **Review** tab between the **Insert** and **Page Layout** tabs.

7 Click the **New Tab** button to create a tab named **New Tab (Custom)**, which appears below the most recently active tab in the **Main Tabs** list.

8 Click the **New Tab (Custom)** tab name, click the **Rename** button, enter **My Commands** in the **Display Name** box, and click **OK** to change the new tab's name to **My Commands**.

9 Click the **New Group (Custom)** group's name and then click the **Rename** button. In the **Rename** dialog box, click the icon that looks like a paint palette (second row, fourth from the right). Then, in the **Display name** box, enter **Formatting**, and click **OK** to change the new group's name to **Formatting**.

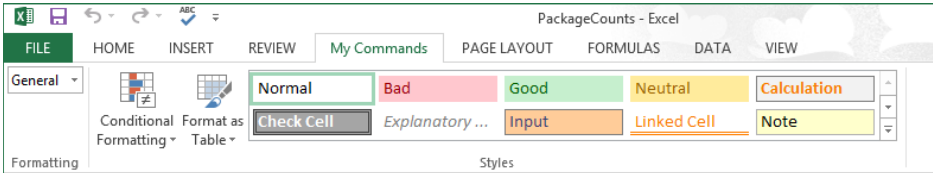
10 In the right tab list, click the **My Commands** tab name. Then, on the left side of the dialog box, click the **Choose Commands From** box's arrow and click **Main Tabs** to display that group of tabs in the left tab list.

11 In the left tab list, click the **Home** tab's expand control, click the **Styles** group's name, and then click the **Add** button to add the **Styles** group to the **My Commands** tab.

12 In the left tab list, below the **Home** tab, click the **Number** group's expand control to display the commands in the **Number** group.

13 In the right tab list, click the **Formatting** group you created earlier. Then, in the left tab list, click the **Number Format** item and click the **Add** button to add the **Number Format** item to the **Formatting** custom group.

14 Click **OK** to save your ribbon customizations, and then click the **My Commands** tab on the ribbon to display the contents of the new tab.

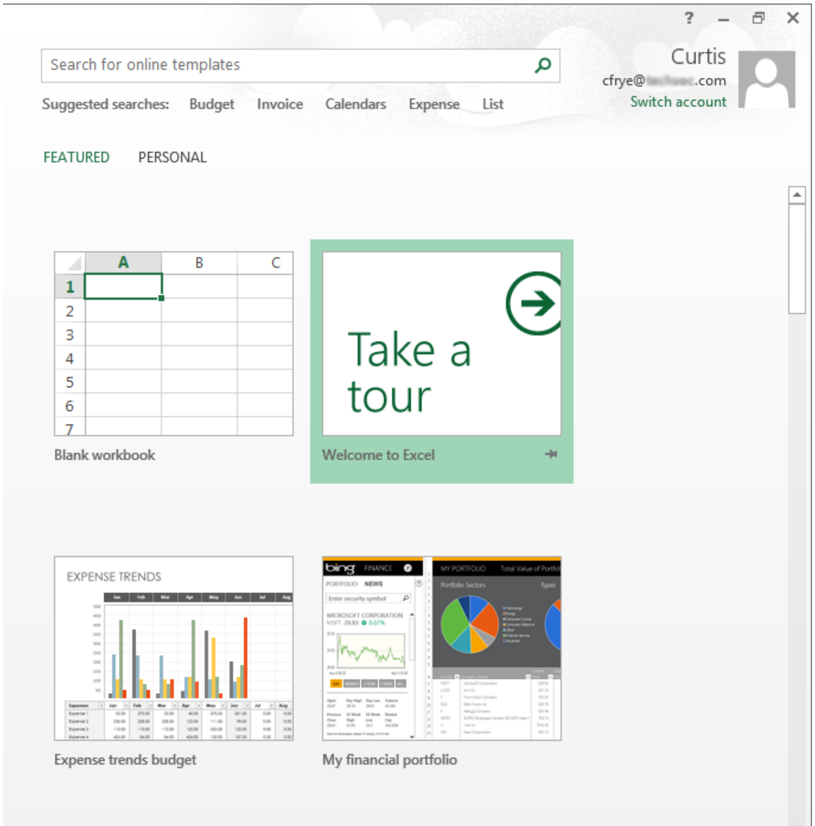


> **IMPORTANT** The remaining exercises in this book assume that you are using Excel 2013 as it was installed on your computer. After you complete this exercise, you should reset the ribbon to its original configuration so that the instructions in the remaining exercises in the book are consistent with your copy of Excel.

CLEAN UP **Close all open workbooks, saving your changes if you want to.**

Creating workbooks

Every time you want to gather and store data that isn't closely related to any of your other existing data, you should create a new workbook. The default workbook in Excel has one worksheet, although you can add more worksheets or delete existing worksheets if you want. Creating a workbook is a straightforward process—you just display the Backstage view, click New, and click the tile that represents the type of workbook you want.



KEYBOARD SHORTCUT Press Ctrl+N to create a blank workbook.

When you start Excel, the program displays the Start experience. With the Start experience, you can select which type of workbook to create. You can create a blank workbook by clicking the Blank Workbook tile or click one of the built-in templates available in Excel. You can then begin to enter data into the worksheet's cells. You could also open an existing workbook and work with its contents. In this book's exercises, you'll work with workbooks created for Consolidated Messenger, a fictional global shipping company. After you make changes to a workbook, you can save it to preserve your work.

KEYBOARD SHORTCUT Press Ctrl+S to save a workbook.

TIP Readers frequently ask, "How often should I save my files?" It is good practice to save your changes every half hour or even every five minutes, but the best time to save a file is whenever you make a change that you would hate to have to make again.

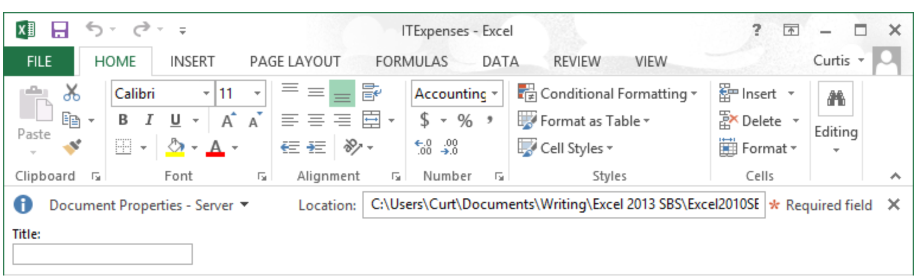
When you save a file, you overwrite the previous copy of the file. If you have made changes that you want to save, but you also want to keep a copy of the file as it was when you saved it previously, you can use the Save As command to specify a name for the new file. To open the Save As dialog box, in the Backstage view, click Save As.

KEYBOARD SHORTCUT Press F12 to open the Save As dialog box.

You can also use the controls in the Save As dialog box to specify a different format for the new file and a different location in which to save the new version of the file. For example, Lori Penor, the chief operating officer of Consolidated Messenger, might want to save an Excel file that tracks consulting expenses as an Excel 2003 file if she needs to share the file with a consulting firm that uses Excel 2003.

After you create a file, you can add information to make the file easier to find when you search by using File Explorer or Windows 8 Search to search for it. Each category of information, or property, stores specific information about your file. In Windows, you can search for files based on the file's author or title, or by keywords associated with the file. A file that tracks the postal code destinations of all packages sent from a vendor might have the keywords *postal*, *destination*, and *origin* associated with it.

To set values for your workbook's built-in properties, you can display the Backstage view, click Info, click Properties, and then click Show Document Panel to display the Document Properties panel below the ribbon. The standard version of the Document Properties panel has fields for the file's author, title, subject, keywords, category, and status, and any comments about the file.



You can also create custom properties by clicking the arrow located to the right of the Document Properties label, and clicking Advanced Properties to open the Properties dialog box. On the Custom page of the Properties dialog box, you can click one of the existing custom categories or create your own by entering a new property name in the Name field, clicking the Type arrow and selecting a data type (for example, Text, Date, Number, or Yes/No), selecting or entering a value in the Value field, and then clicking Add. If you want to delete an existing custom property, point to the Properties list, click the property you want to get rid of, and click Delete. After you finish making your changes, click the OK button. To hide the Document Properties panel, click the Close button in the upper-right corner of the panel.

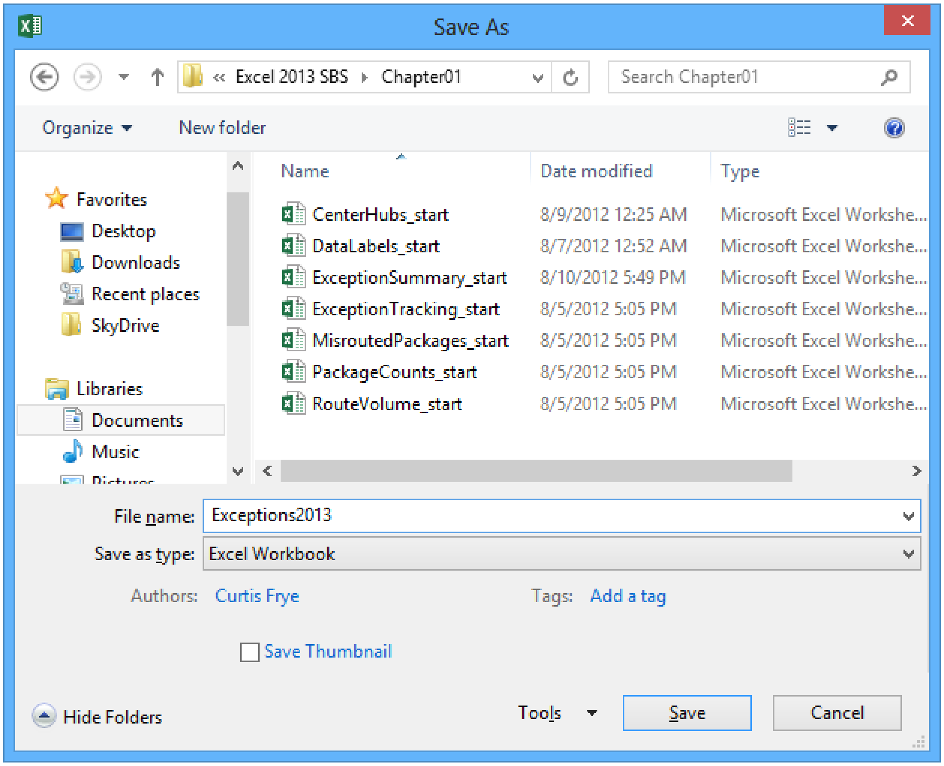
When you're done modifying a workbook, you should save your changes and then, to close the file, display the Backstage view and then click Close. You can also click the Close button in the upper-right corner of the workbook window.

KEYBOARD SHORTCUT Press Ctrl+W to close a workbook.

In this exercise, you'll close an open workbook, create a new workbook, save the workbook with a new name, assign values to the workbook's standard properties, and create a custom property.

SET UP **You need the ExceptionSummary workbook located in the Chapter01 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. Click the **File** tab to display the **Backstage** view, and then click **Close** to close the **ExceptionSummary** workbook.
2. Display the **Backstage** view, and then click **New** to display the **New** page.
3. Click **Blank workbook**, and then click **Create** to open a new, blank workbook.
4. Display the **Backstage** view, click **Save As**, click **Computer**, and then click **Browse** to open the **Save As** dialog box.
5. Use the navigation controls to display the **Chapter01** folder. In the **File name** field, enter **Exceptions2013**.



6 Click the **Save** button to save your work and close the **Save As** dialog box.

7 Display the **Backstage** view, click **Info**, click **Properties**, and then click **Show Document Panel** to display the **Document Properties** panel.

8 In the **Keywords** field, enter **exceptions, regional, percentage**.

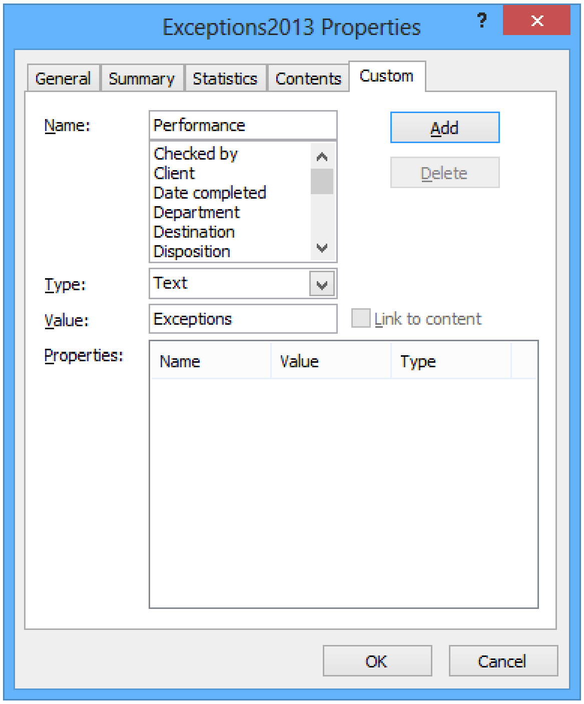
9 In the **Category** field, enter **performance**.

10 Click the arrow at the right end of the **Document Properties** button, and then click **Advanced Properties** to open the **Exceptions2013 Properties** dialog box.

11 Click the **Custom** tab to display the **Custom** page.

12 In the **Name** field, enter **Performance**.

13 In the **Value** field, enter **Exceptions**.



14 Click the **Add** button, and then click **OK** to save the properties and close the **Exceptions2013 Properties** dialog box.

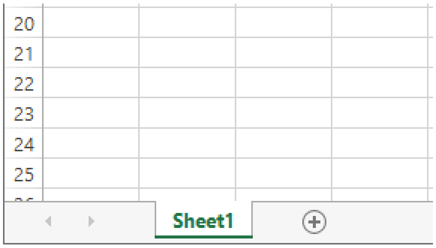
CLEAN UP **Close the Exceptions2013 workbook, saving your changes if you want to.**

Modifying workbooks

Most of the time, you create a workbook to record information about a particular activity, such as the number of packages that a regional distribution center handles or the average time a driver takes to complete all deliveries on a route. Each worksheet within that workbook should represent a subdivision of that activity. To display a particular worksheet, click the worksheet's tab on the tab bar (just below the grid of cells).

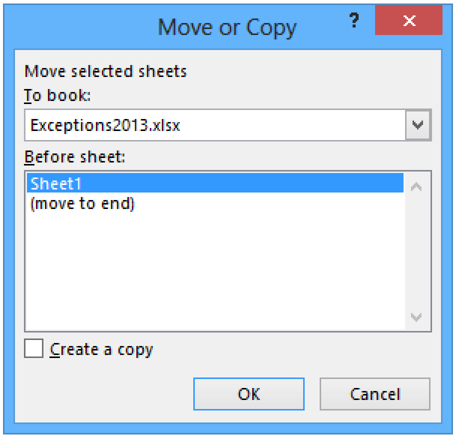
In the case of Consolidated Messenger, the workbook used to track daily package volumes could have a separate worksheet for each regional distribution center. As mentioned earlier,

new Excel workbooks contain one worksheet; because Consolidated Messenger uses nine regional distribution centers, you would need to create eight new worksheets. To create a new worksheet, click the New Sheet button (which looks like a plus sign in a circle) at the right edge of the tab bar.



When you create a worksheet, Excel assigns it a generic name such as *Sheet2*, *Sheet3*, or *Sheet4*. After you decide what type of data you want to store on a worksheet, you should change the default worksheet name to something more descriptive. For example, you could change the name of Sheet1 in the regional distribution center tracking workbook to *Northeast*. When you want to change a worksheet's name, double-click the worksheet's tab on the tab bar to highlight the worksheet name, enter the new name, and press Enter.

Another way to work with more than one worksheet is to copy a worksheet from another workbook to the current workbook. One circumstance in which you might consider copying worksheets to the current workbook is if you have a list of your current employees in another workbook. You can copy worksheets from another workbook by right-clicking the tab of the sheet you want to copy and, on the shortcut menu, clicking Move Or Copy to open the Move Or Copy dialog box.



TIP When you select the Create A Copy check box, Excel leaves the copied worksheet in its original workbook, whereas clearing the check box causes Excel to delete the worksheet from its original workbook.

After the worksheet is in the target workbook, you can change the worksheets' order to make the data easier to locate within the workbook. To change a worksheet's location in the workbook, you drag its sheet tab to the location you want on the tab bar. If you want to remove a worksheet from the tab bar without deleting the worksheet, you can do so by right-clicking the worksheet's tab on the tab bar and clicking Hide on the shortcut menu. When you want Excel to redisplay the worksheet, right-click any visible sheet tab and then click Unhide. In the Unhide dialog box, click the name of the sheet you want to display, and click OK.

To differentiate a worksheet from others, or to visually indicate groups or categories of worksheets in a multiple-worksheet workbook, you can change the color of a worksheet tab. To do so, right-click the tab, point to Tab Color, and then click the color you want.

TIP If you copy a worksheet to another workbook, and the destination workbook has the same Office Theme applied as the active workbook, the worksheet retains its tab color. If the destination workbook has another theme applied, the worksheet's tab color changes to reflect that theme. For more information about Office themes, see Chapter 4, "Changing workbook appearance."

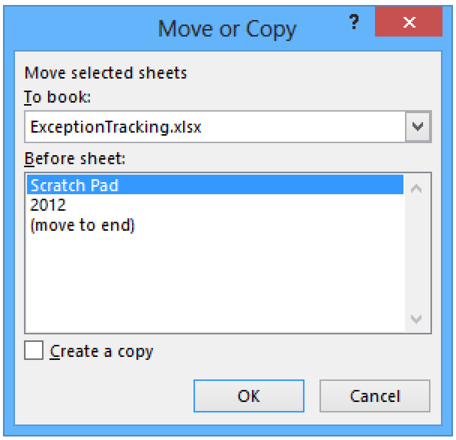
If you determine that you no longer need a particular worksheet, such as one you created to store some figures temporarily, you can delete the worksheet quickly. To do so, right-click its sheet tab, and then click Delete.

In this exercise, you'll insert and rename a worksheet, change a worksheet's position in a workbook, hide and unhide a worksheet, copy a worksheet to another workbook, change a worksheet's tab color, and delete a worksheet.

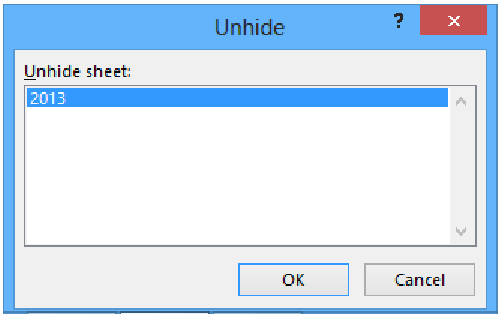
SET UP **You need the ExceptionTracking workbook located in the Chapter01 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. On the tab bar, click the **New Sheet** button to create a new worksheet.
2. Right-click the new worksheet's sheet tab, and then click **Rename** to highlight the new worksheet's name.
3. Enter **2013**, and then press **Enter**.
4. On the tab bar, double-click the **Sheet1** sheet tab to highlight the worksheet's name.

5. Enter **2012**, and then press **Enter**.
6. Right-click the **2013** sheet tab, point to **Tab Color**, and then, in the **Standard Colors** palette, click the green swatch to change the **2013** sheet tab to green.
7. On the tab bar, drag the **2012** sheet tab to the right of the **Scratch Pad** sheet tab.
8. Right-click the **2013** sheet tab, and then click **Hide** to remove the **2013** sheet tab from the tab bar.
9. Right-click the **2012** sheet tab, and then click **Move or Copy** to open the **Move or Copy** dialog box.



10. Click the **To book** arrow, and then in the list, click **(new book)**.
11. Select the **Create a copy** check box.
12. Click **OK** to create a new workbook and copy the selected worksheet into it.
13. On the **Quick Access Toolbar**, click **Save** to open the **Save As** dialog box.
14. In the **File name** field, enter **2012 Archive**, and then press **Enter** to save the workbook.
15. On the **View** tab, click the **Switch Windows** button, and then click **ExceptionTracking** to display the **ExceptionTracking** workbook.
16. On the tab bar, right-click the **Scratch Pad** sheet tab, and then click **Delete**. In the dialog box that opens, click **Delete** to confirm the operation.
17. Right-click the **2012** sheet tab, and then click **Unhide** to open the **Unhide** dialog box.



18 Click **2013**, and then click **OK** to close the **Unhide** dialog box and display the **2013** worksheet in the workbook.

CLEAN UP **Close the ExceptionTracking workbook and the 2012 Archive workbook, saving your changes if you want to.**

Modifying worksheets

After you put up the signposts that make your data easy to find, you can take other steps to make the data in your workbooks easier to work with. For example, you can change the width of a column or the height of a row in a worksheet by dragging the column's right border or the row's bottom border to the position you want. Increasing a column's width or a row's height increases the space between cell contents, making your data easier to read and work with.

TIP You can apply the same change to more than one row or column by selecting the rows or columns you want to change and then dragging the border of one of the selected rows or columns to the location you want. When you release the mouse button, all the selected rows or columns change to the new height or width.

Inserting rows, columns, and cells

Modifying column width and row height can make a workbook's contents easier to work with, but you can also insert a row or column between cells that contain data to make your data easier to read. Adding space between the edge of a worksheet and cells that contain data, or perhaps between a label and the data to which it refers, makes the workbook's contents less crowded. You insert rows by clicking a cell and clicking the Home tab on the ribbon. Then, in the Cells group, in the Insert list, click Insert Sheet Rows. Excel inserts a row above the row that contains the active cell. You insert a column in much the same way, by choosing Insert Sheet Columns from the Insert list. When you do this, Excel inserts a column to the left of the active cell.

When you insert a row, column, or cell in a worksheet that has had formatting applied, the Insert Options button appears. When you click the Insert Options button, Excel displays a list of choices you can make about how the inserted row or column should be formatted, as described in the following table.

Option	Action
Format Same As Above	Applies the formatting of the row above the inserted row to the new row
Format Same As Below	Applies the formatting of the row below the inserted row to the new row
Format Same As Left	Applies the formatting of the column to the left of the inserted column to the new column
Format Same As Right	Applies the formatting of the column to the right of the inserted column to the new column
Clear Formatting	Applies the default format to the new row or column

If you want to delete a row or column, right-click the row or column head and then, on the shortcut menu that appears, click Delete. You can temporarily hide rows or columns by selecting those rows or columns and then, on the Home tab, in the Cells group, clicking the Format button, pointing to Hide & Unhide, and then clicking either Hide Rows or Hide Columns. The rows or columns you selected disappear, but they aren't gone for good as they would be if you'd used Delete. Instead, they have just been removed from the display until you call them back. To return the hidden rows to the display, select the row or column headers on either side of the hidden rows or columns. Then, on the Home tab, in the Cells group, click the Format button, point to Hide & Unhide, and then click either Unhide Rows or Unhide Columns.

IMPORTANT If you hide the first row or column in a worksheet, you must click the Select All button in the upper-left corner of the worksheet (above the first row header and to the left of the first column header) or press Ctrl+A to select the entire worksheet. Then, on the Home tab, in the Cells group, click Format, point to Hide & Unhide, and then click either Unhide Rows or Unhide Columns to make the hidden data visible again.

Just as you can insert rows or columns, you can insert individual cells into a worksheet. To insert a cell, click the cell that is currently in the position where you want the new cell to appear. On the Home tab, in the Cells group, in the Insert list, click Insert Cells to open the Insert dialog box. In the Insert dialog box, you can choose whether to shift the cells surrounding the inserted cell down (if your data is arranged as a column) or to the right (if your data is arranged as a row). When you click OK, the new cell appears, and the contents of affected cells shift down or to the right, as appropriate. Similarly, if you want to delete a block of cells, select the cells, and on the Home tab, in the Cells group, in the Delete list, click Delete Cells to open the Delete dialog box—complete with options that you can use to choose how to shift the position of the cells around the deleted cells.

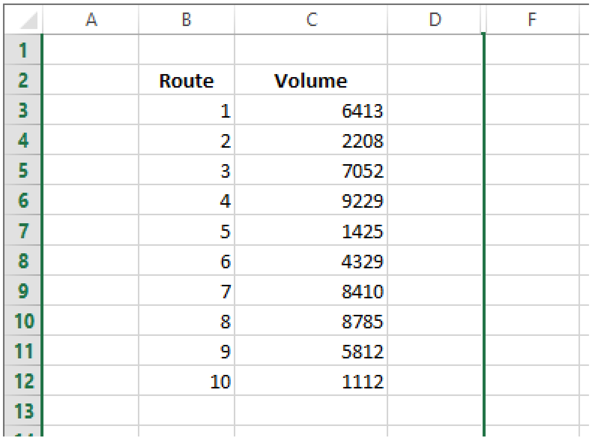
TIP The Insert dialog box also includes options you can click to insert a new row or column; the Delete dialog box has similar options for deleting an entire row or column.

If you want to move the data in a group of cells to another location in your worksheet, select the cells you want to move and point to the selection's border. When the pointer changes to a four-pointed arrow, you can drag the selected cells to the desired location on the worksheet. If the destination cells contain data, Excel displays a dialog box asking whether you want to overwrite the destination cells' contents. If you want to replace the existing values, click OK. If you don't want to overwrite the existing values, click Cancel and insert the required number of cells to accommodate the data you want to move.

In this exercise, you'll insert a column and row into a worksheet, specify insert options, hide a column, insert a cell into a worksheet, delete a cell from a worksheet, and move a group of cells within the worksheet.

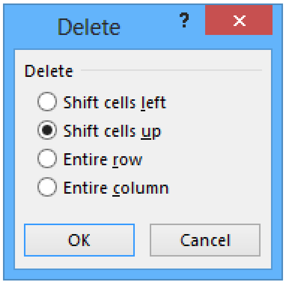
SET UP **You need the RouteVolume workbook located in the Chapter01 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. On the **May 12** worksheet, select cell **A1**.
2. On the **Home** tab, in the **Cells** group, click the **Insert** arrow, and then in the list, click **Insert Sheet Columns** to create a new column **A**.
3. In the **Insert** list, click **Insert Sheet Rows** to create a new row **1**.
4. Click the **Insert Options** button that appears below the lower-right corner of the selected cell, and then click **Clear Formatting** to remove the formatting from the new row **1**.
5. Right-click the column header of column **E**, and then click **Hide** to remove column **E** from the display.



	A	B	C	D	F
1					
2		Route	Volume		
3		1	6413		
4		2	2208		
5		3	7052		
6		4	9229		
7		5	1425		
8		6	4329		
9		7	8410		
10		8	8785		
11		9	5812		
12		10	1112		
13					

6. On the tab bar, click the **May 13** sheet tab to display the worksheet of the same name.
7. Click cell **B6**.
8. On the **Home** tab, in the **Cells** group, click the **Delete** arrow, and then in the list, click **Delete Cells** to open the **Delete** dialog box.



9 If necessary, click **Shift cells up**, and then click **OK**. Excel deletes cell **B6**, moving the cells below it up to fill in the gap.

10 Click cell **C6**.

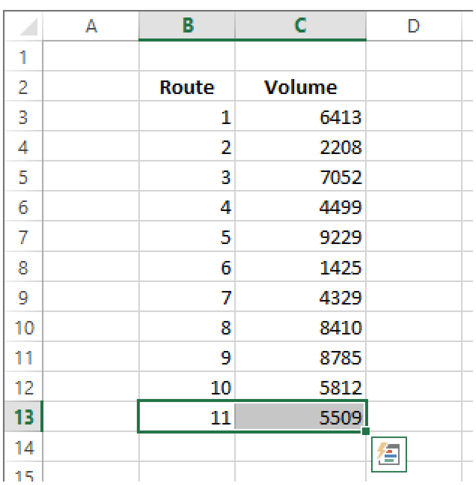
11 In the **Cells** group, in the **Insert** list, click **Insert Cells** to open the **Insert** dialog box.

12 If necessary, click **Shift cells down**, and then click **OK** to close the **Insert** dialog box, create a new cell **C6**, and move cells **C6:C11** down to accommodate the inserted cell.

13 In cell **C6**, enter **4499**, and then press **Enter**.

14 Select cells **E13:F13**.

15 Point to the border of the selected cells. When the pointer changes to a four-pointed arrow, drag the selected cells to cells **B13:C13**. The dragged cells replace cells **B13:C13**.

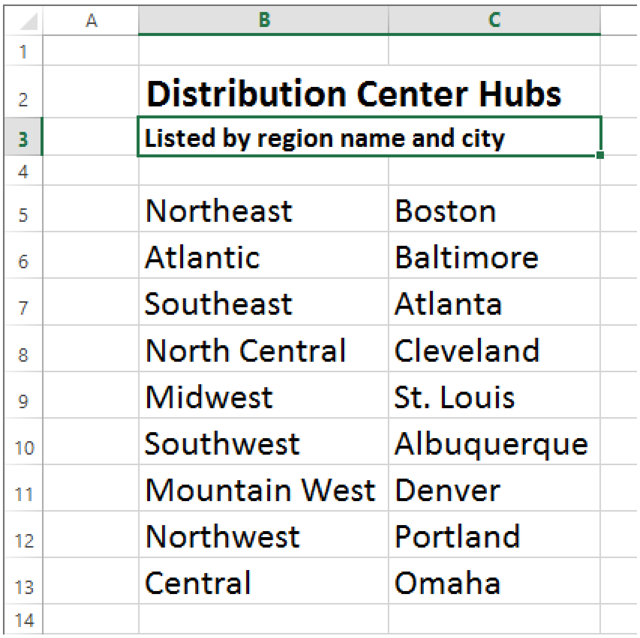


	A	B	C	D
1				
2		Route	Volume	
3		1	6413	
4		2	2208	
5		3	7052	
6		4	4499	
7		5	9229	
8		6	1425	
9		7	4329	
10		8	8410	
11		9	8785	
12		10	5812	
13		11	5509	
14				
15				

CLEAN UP **Close the RouteVolume workbook, saving your changes if you want to.**

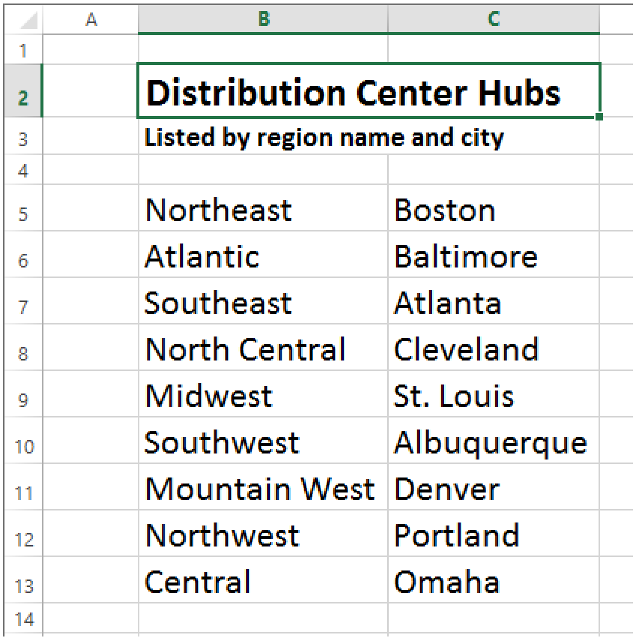
Merging and unmerging cells

Most Excel worksheets contain data about a specific subject, such as packages shipped, revenue, or operating costs. One of the best ways to communicate the contents of a worksheet is to use a label. For example, you might create a list of Consolidated Messenger's delivery regions with the city where the region's distribution hub is located.



The text *Distribution Center Hubs* appears to span two cells, B2 and C2, but is in fact contained within cell B2. If you select cell B2, Excel highlights the cell's border, which obscures the text. If you want to combine cells B2 and C2 into a single cell, you can do so by merging the cells into a single cell.

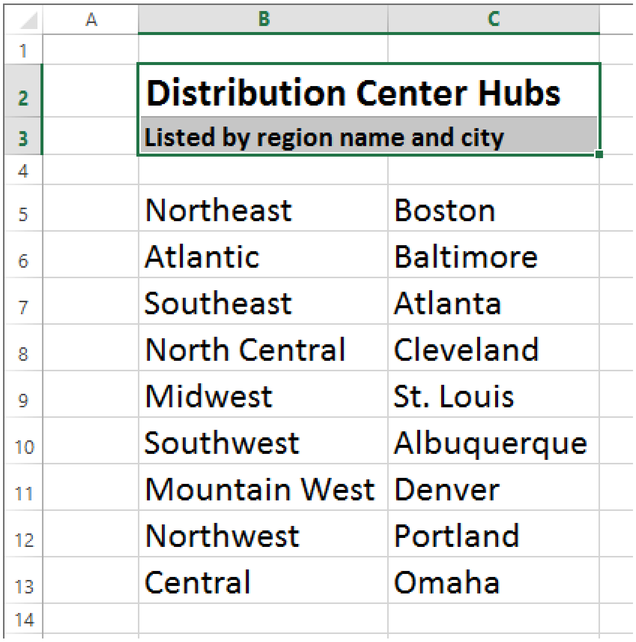
To merge two or more cells, you select the cells, click the Home tab, click Merge & Center, and then click Merge Cells. Now when you click cell B2, the selection border extends along the entire merged cell without blocking the text.



IMPORTANT When you merge two or more cells, Excel retains just the text in the range's top left cell. All other text is deleted.

When you click the Merge & Center button, a list of options appears. In addition to merging cells, you can click Merge & Center to combine the selected cells into a single cell and center the text within the merged cell. You should strongly consider using the Merge & Center option for label text, such as above a list of data where the title spans more than one column.

You can also merge the cells in multiple rows at the same time. For example, suppose your list has a main heading and a subheading. You can merge the cells in the two rows that contain headings by clicking the Home tab, clicking Merge & Center, and then clicking Merge Across.



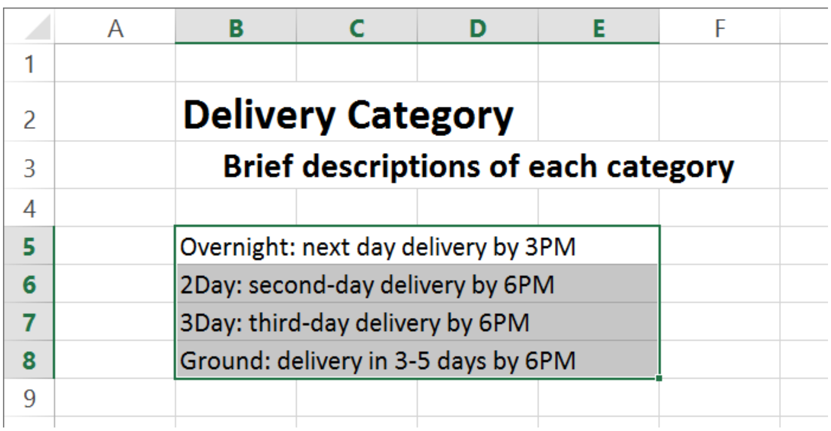
IMPORTANT When you select the header cells, click the Home tab, click Merge & Center, and then click either Merge & Center or Merge Cells, Excel deletes any text that's not in the top-left cell of the selected range.

If you want to split merged cells into their individual cells, click the Home tab, click Merge & Center, and then click Unmerge Cells.

In this exercise, you will merge cells, unmerge cells, merge and center cells, and use Merge Across to combine cells in several rows into one merged cell per row.

SET UP You need the DataLabels workbook located in the Chapter01 practice file folder to complete this exercise. Open the workbook, and then follow the steps.

1. Select cells **B2:D2**.
2. Click the **Home** tab, click the **Merge & Center** arrow, and then click **Merge Cells** to merge the cells into a single cell.
3. Select cells **B3:F3**.
4. Click the **Home** tab, click the **Merge & Center** arrow, and then click **Merge & Center** to merge the cells into a single cell and center its contents.
5. Select cells **B5:E8**.
6. Click the **Home** tab, click the **Merge & Center** arrow, and then click **Merge Across** to merge the cells in each row into a single cell. The operation creates four merged cells.



7. Select cell **B2**.
8. Click the **Home** tab, click the **Merge & Center** arrow, and then click **Unmerge Cells** to split the merged cell into its original cells.
9. Select cells **B2:D2**.
10. Click the **Home** tab, click the **Merge & Center** arrow, and then click **Merge & Center** to merge the cells into a single cell and center its contents.

CLEAN UP Close the DataLabels workbook, saving your changes if you want to.

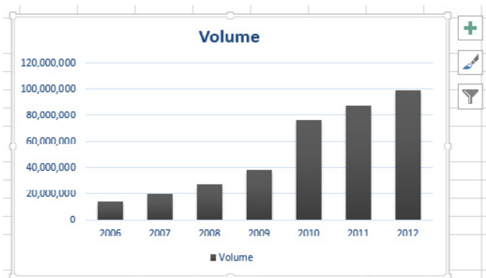
Key points

- Save your work whenever you do something you'd hate to have to do again.
- Assigning values to a workbook's properties makes it easier to find your workbook by searching in File Explorer or by using Windows 8 Search.
- Be sure to give your worksheets descriptive names.
- If you want to use a worksheet's data in another workbook, you can send a copy of the worksheet to that other workbook without deleting the original worksheet.
- You can delete a worksheet you no longer need, but you can also hide a worksheet in a workbook. When you need the data on the worksheet, you can unhide it.
- You can save yourself a lot of cutting and pasting by inserting and deleting worksheet cells, columns, and rows.
- By merging cells, you can add data labels that span multiple columns.
- Customize your Excel 2013 program window by changing how it displays your workbooks, zooming in on data, adding frequently used buttons to the Quick Access Toolbar, and rearranging or customizing the ribbon to meet your needs.

Chapter at a glance

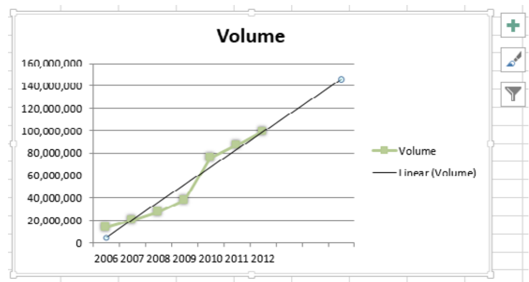
Charts

Customize the appearance of charts,
page 254



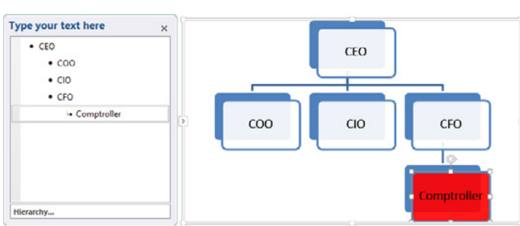
Trendlines

Find trends in your data,
page 262



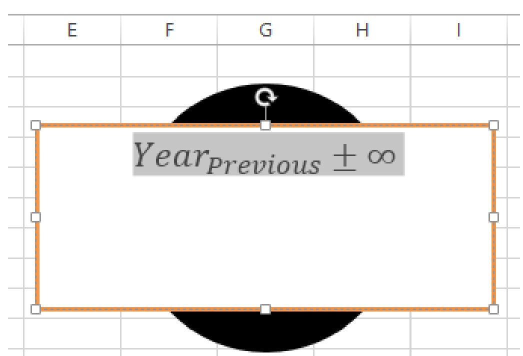
Diagrams

Create diagrams by using SmartArt,
page 273



Shapes

Create shapes and mathematical equations,
page 278



Creating charts and graphics

9

IN THIS CHAPTER, YOU WILL LEARN HOW TO

- Create charts.
- Customize the appearance of charts.
- Find trends in your data.
- Create dual-axis charts.
- Summarize your data by using sparklines.
- Create diagrams by using SmartArt.
- Create shapes and mathematical equations.

When you enter data into a Microsoft Excel 2013 worksheet, you create a record of important events, whether they are individual sales, sales for an hour of a day, or the price of a product. However, a list of values in cells can't communicate easily the overall trends in the data. The best way to communicate trends in a large collection of data is by creating a chart, which summarizes data visually. In addition to the standard charts, with Excel 2013, you can create compact charts called sparklines, which summarize a data series by using a graph contained within a single cell.

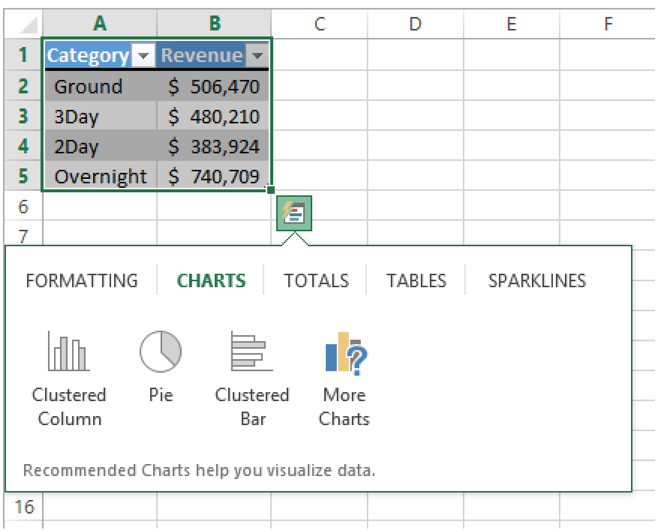
You have a great deal of control over your charts' appearance—you can change the color of any chart element, choose a different chart type to better summarize the underlying data, and change the display properties of text and numbers in a chart. If the data in the worksheet used to create a chart represents a progression through time, such as sales over several months, you can have Excel extrapolate future sales and add a trendline to the graph that represents that prediction.

In this chapter, you'll create a chart and customize its elements, find trends in your data, create a dual-axis chart, summarize data by using sparklines, create diagrams by using SmartArt, and create shapes that contain mathematical equations.

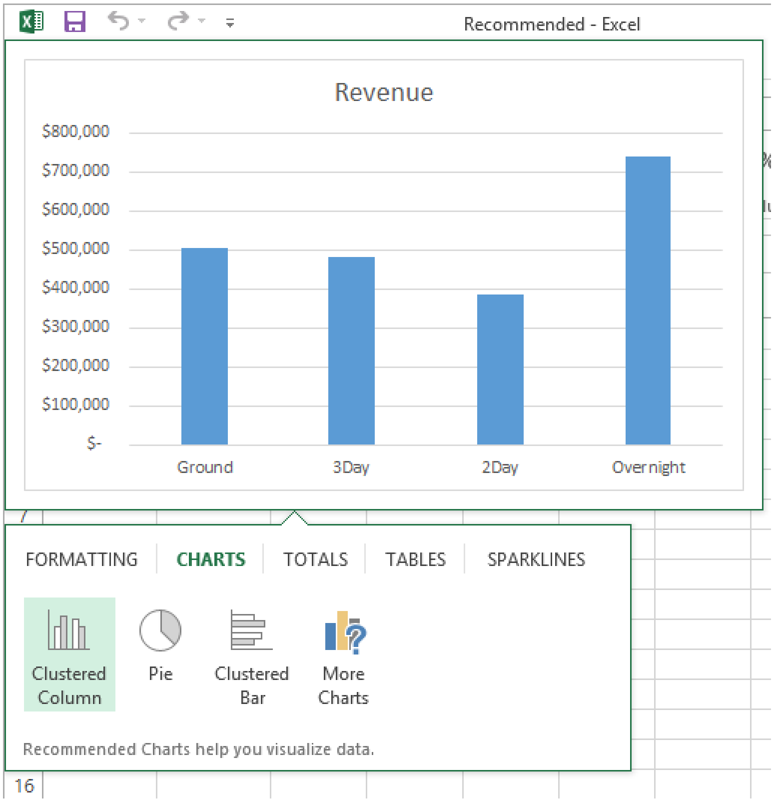
PRACTICE FILES To complete the exercises in this chapter, you need the practice files contained in the Chapter09 practice file folder. For more information, see "Download the practice files" in this book's Introduction.

Creating charts

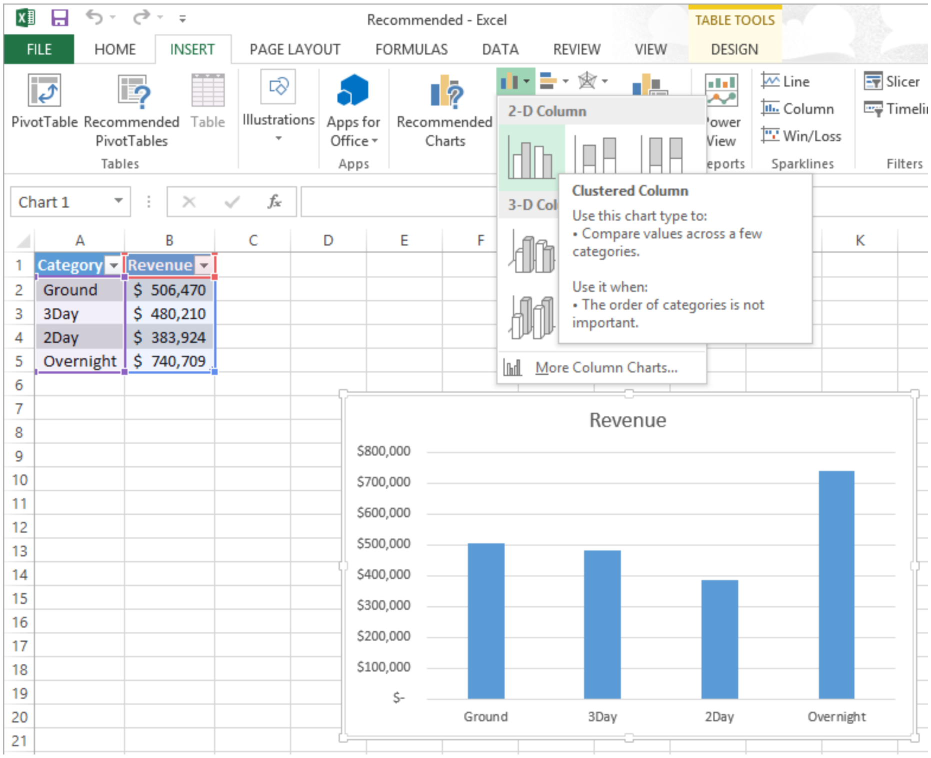
With Excel 2013, you can create charts quickly by using the Quick Analysis Lens, which displays recommended charts to summarize your data. To display recommended charts, select the entire data range you want to chart, click the Quick Analysis button, and then click Charts to display the types of charts that Excel recommends.



You can display a live preview of each recommended chart by pointing to the icon that represents that chart. Clicking the icon adds the chart to your worksheet.



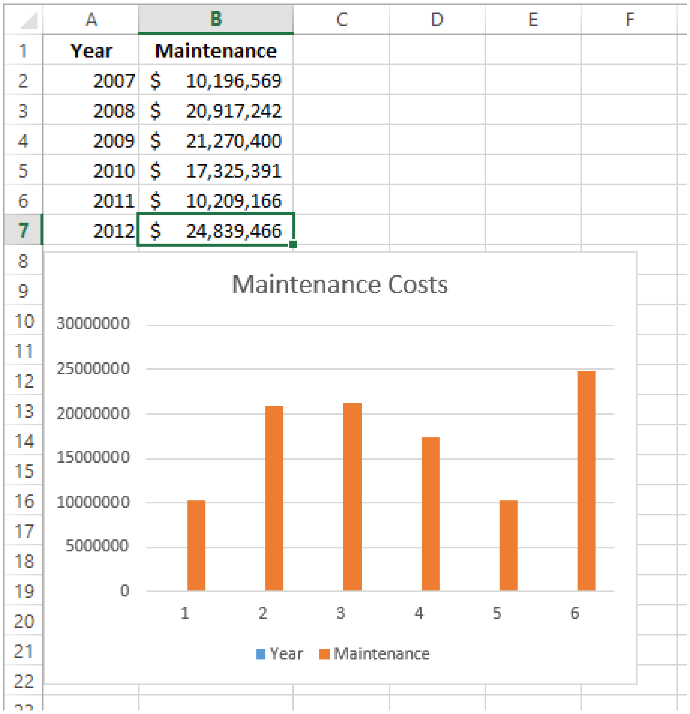
If the chart you want to create doesn't appear in the Recommended Charts gallery, select the data that you want to summarize visually and then, on the Insert tab, in the Charts group, click the type of chart that you want to create to have Excel display the available chart subtypes. When you point to a subtype, Excel displays a live preview of what the chart will look like if you click that subtype.



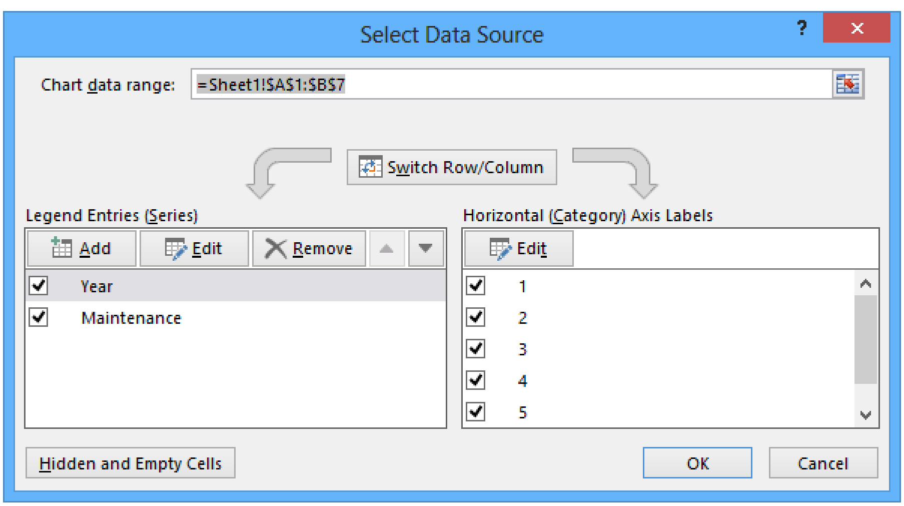
When you click a chart subtype, Excel creates the chart by using the default layout and color scheme defined in your workbook's theme.

KEYBOARD SHORTCUT Press Alt+F11 to create a chart of the default type on the current worksheet or press F11 to create a new chart sheet. Unless you or another user changed the default, Excel creates a column chart. For a complete list of keyboard shortcuts, see "Keyboard shortcuts" at the end of this book.

If Excel doesn't plot your data the way that you want it to appear, you can change the axis on which Excel plots a data column. The most common reason for incorrect data plotting is that the column to be plotted on the horizontal axis contains numerical data instead of textual data. For example, if your data includes a Year column and a Maintenance column, instead of plotting maintenance data for each consecutive year along the horizontal axis, Excel plots both of those columns in the body of the chart and creates a sequential series to provide values for the horizontal axis.

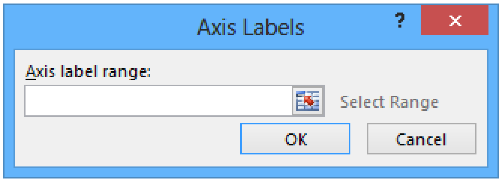


You can change which data Excel applies to the vertical axis (also known as the *y-axis*) and the horizontal axis (also known as the *x-axis*). To make that change, select the chart and then, on the Design tab, in the Data group, click Select Data to open the Select Data Source dialog box.

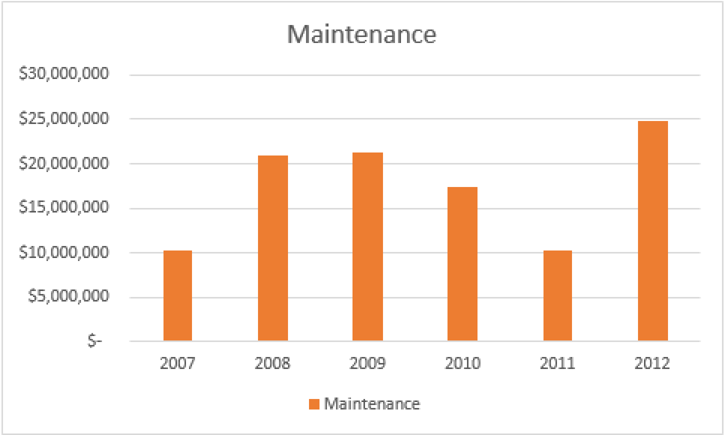


9

As shown in the preceding graphic, the Year column doesn't belong in the Legend Entries (Series) pane, which corresponds to a column chart's vertical axis. To remove a column from an axis, select the column's name, and then click Remove. To add the column to the Horizontal (Category) Axis Labels pane, click that pane's Edit button to display the Axis Labels dialog box, which you can use to select a range of cells on a worksheet to provide values for an axis.



In the Axis Labels dialog box, click the Collapse Dialog button at the right edge of the Axis Label Range field, select the cells to provide the values for the horizontal axis (not including the column header, if any), click the Expand Dialog button, and then click OK. Click OK again to close the Select Data Source dialog box and revise your chart.

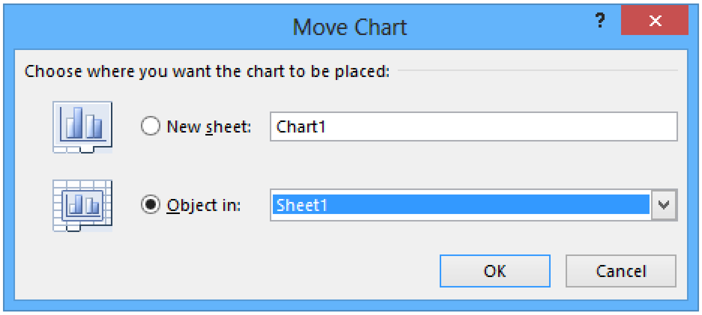


After you create your chart, you can change its size to reflect whether the chart should dominate its worksheet or take on a role as another informative element on the worksheet. For example, Gary Schare, the chief executive officer of Consolidated Messenger, could create a

workbook that summarizes the performance of each of his company's business units. In that case, he would display the chart and data for each business unit on the same worksheet, so he would want to make his charts small.

To resize a chart, select the chart, and then drag one of the handles on the chart's edges. By using the handles in the middle of the edges, you can resize the chart in one direction. When you drag a handle on the left or right edge, the chart gets narrower or wider, whereas when you drag the handles on the chart's top and bottom edges, the chart gets shorter or taller. You can drag a corner handle to change the chart's height and width at the same time; and you can hold down the Shift key as you drag the corner handle to change the chart's size without changing its proportions.

Just as you can control a chart's size, you can also control its location. To move a chart within a worksheet, drag the chart to the desired location. If you want to move the chart to a new worksheet, click the chart and then, on the Design tool tab, in the Location group, click Move Chart to open the Move Chart dialog box.



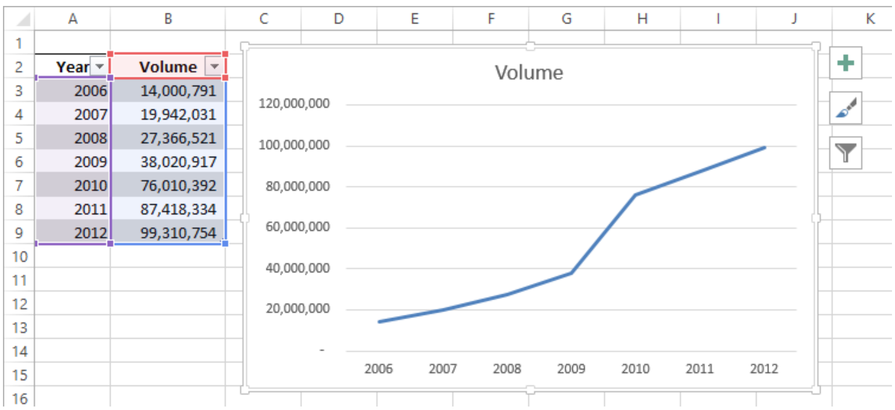
To move the chart to a new chart sheet, click New Sheet and enter the new sheet's name in the accompanying field. Clicking New Sheet creates a chart sheet that contains only your chart. You can still resize the chart on that sheet, but when Excel creates the new chart sheet, the chart takes up the full sheet.

To move the chart to an existing worksheet, click Object In and then, in the Object In list, click the worksheet to which you want to move the chart.

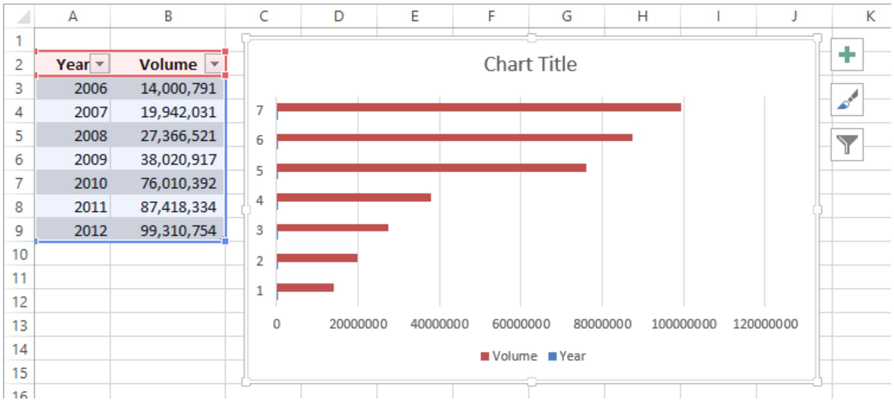
In this exercise, you'll create a chart, change how the chart plots your data, move your chart within a worksheet, and move your chart to its own chart sheet.

SET UP **You need the YearlyPackageVolume workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. On the **Data** worksheet, click any cell in the Excel table, and then press **Ctrl+*** to select the entire table.
2. In the lower-right corner of the Excel table, click the **Quick Analysis** button to display tools available in the **Quick Analysis** gallery.
3. Click the **Charts** tab to display the available chart types.
4. Click **Line** to create the recommended line chart.



5. Press **Ctrl+Z** to undo the last action and remove the chart from your worksheet.
6. On the **Insert** tab, in the **Charts** group, click **Bar** and then, in the **2D Bar** group, click the first chart subtype, **Clustered Bar**. Excel creates the chart, with both the **Year** and **Volume** data series plotted in the body of the chart.



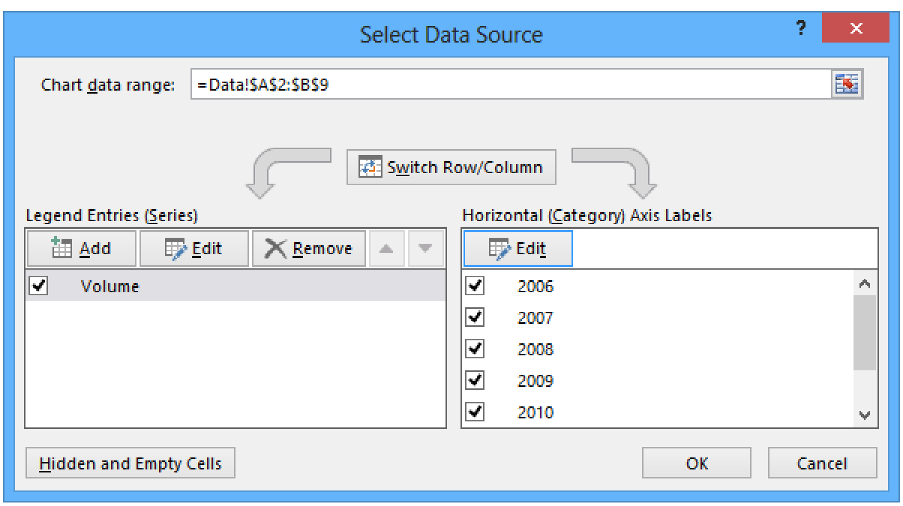
7 On the **Design** tab, in the **Data** group, click **Select Data** to open the **Select Data Source** dialog box.

8 In the **Legend Entries (Series)** area, click **Year**.

9 Click **Remove** to delete the **Year** series.

10 In the **Horizontal (Category) Axis Labels** area, click **Edit** to open the **Axis Labels** dialog box.

11 Select cells **A3:A9**, and then click **OK**. The **Axis Labels** dialog box closes, and the **Select Data Source** dialog box reappears with the years in the **Horizontal (Category) Axis Labels** area.

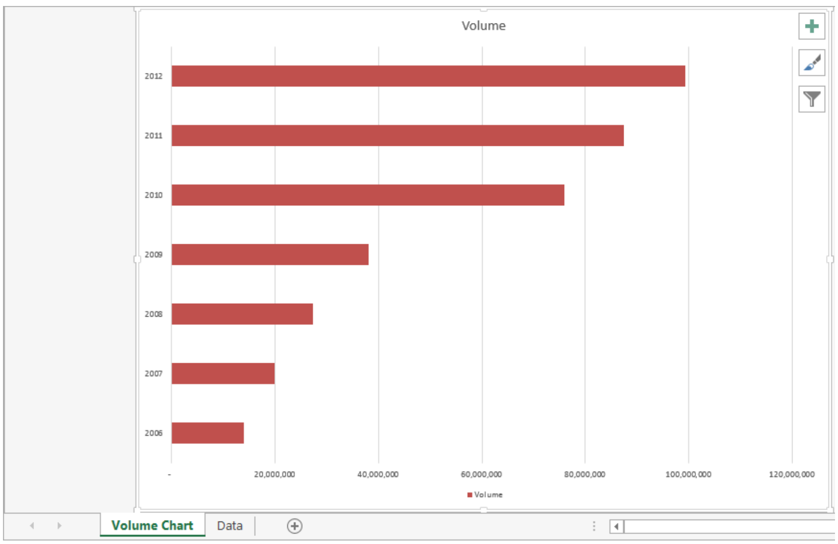


12 Click **OK**. Excel redraws your chart, using the years as the values for the horizontal axis.

13 Point to (don't click) the body of the chart, and when the pointer changes to a four-headed arrow drag the chart up and to the left so that it covers the Excel table.

14 On the **Design** tab, in the **Location** group, click **Move Chart** to open the **Move Chart** dialog box.

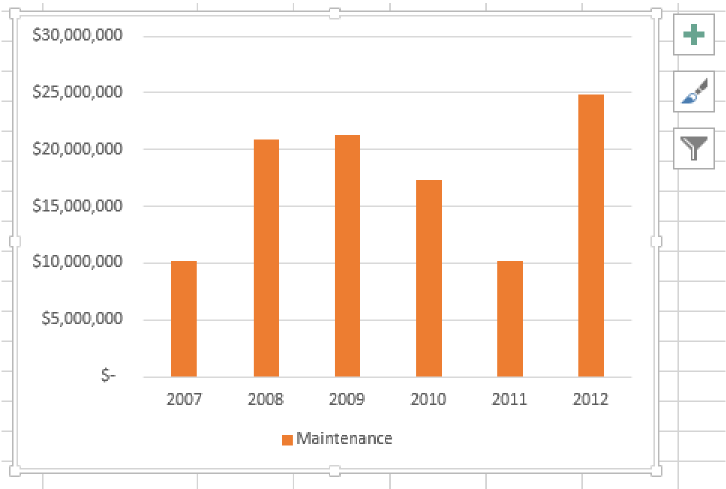
15 Click **New sheet**, enter **Volume Chart** in the sheet name box, and then click **OK**. Your chart appears on a chart sheet named *Volume Chart*.



CLEAN UP **Close the YearlyPackageVolume workbook, saving your changes if you want to.**

Customizing the appearance of charts

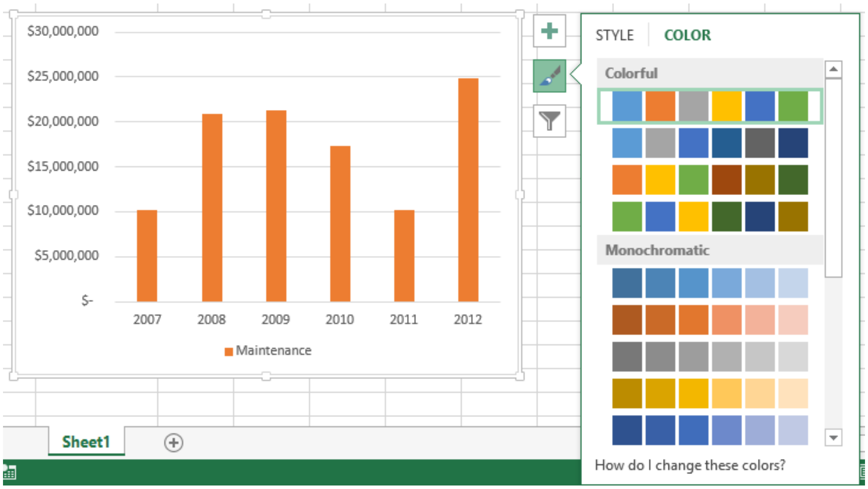
If you want to change a chart's appearance, select the chart and then click the Chart Styles button, which appears in a group of three buttons. These buttons, which are new in Excel 2013, put chart formatting and data controls within easy reach of your chart.



The Chart Styles gallery has two tabs: Style and Color. You can select a new look for you chart by choosing from the many styles on the Style.

TIP If you prefer to work with the ribbon, these same styles appear in the Chart Styles gallery on the Design tab.

Clicking the Color tab in the Chart Styles gallery displays a series of color schemes that you can select to change your chart's appearance.

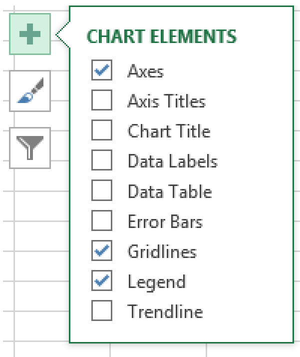


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TIP The styles in the Chart Styles gallery are tied to your workbook's theme. If you change your workbook's theme, Excel changes your chart's appearance to reflect the new theme's colors.

When you create a chart by using the tools in the Charts group on the Insert tab, Excel creates an attractive chart that focuses on the data. In most cases, the chart has a title, legend (list of data series displayed in the chart), horizontal lines in the body of the chart to make it easier to discern individual values, and axis labels. If you want to create a chart that has more or different elements, such as additional data labels for each data point plotted on your chart, you can do so by selecting the chart and then, on the Design tab, in the Chart Layouts group, clicking Quick Layouts and then clicking the layout you want.

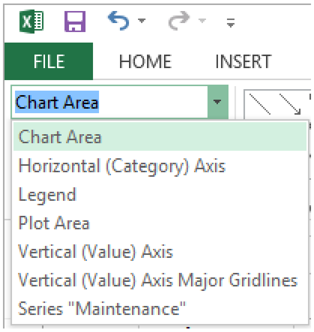
If you don't find the exact chart layout you want, you can select the chart and then click the Chart Elements action button, which appears to the right of the chart, to control each element's appearance and options.



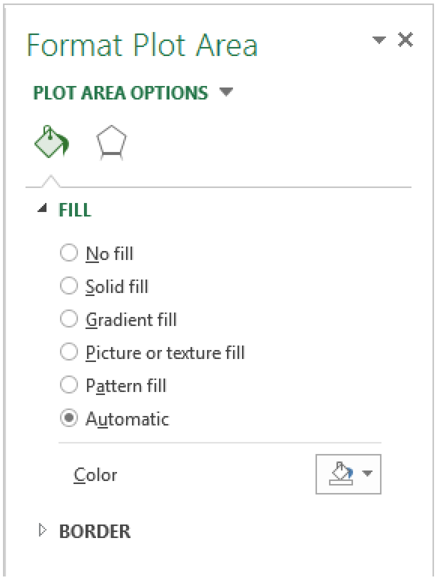
By selecting the Gridlines check box, you can determine whether the chart displays horizontal and vertical gridlines.

In addition to changing your chart's layout, you can control the appearance of each element within the chart. To select a chart element to format, click that element. For example, if you want to change the formatting of the data series named Volume in the column chart you created in the previous exercise, you can click any column in the series to select the entire series. Any formatting changes you make then apply to every point in the entire series. If you want to change a single data point, select the entire series, and then click the chart element (for example, a column) that represents the data point that you want to change. For example, you can highlight the column that represents the year 2011 in the chart you created in the previous exercise.

You can display a list of the selectable chart elements by selecting the chart and then, on the Format tab, in the Current Selection group, clicking the Chart Elements arrow. Then click the desired chart element to select it.



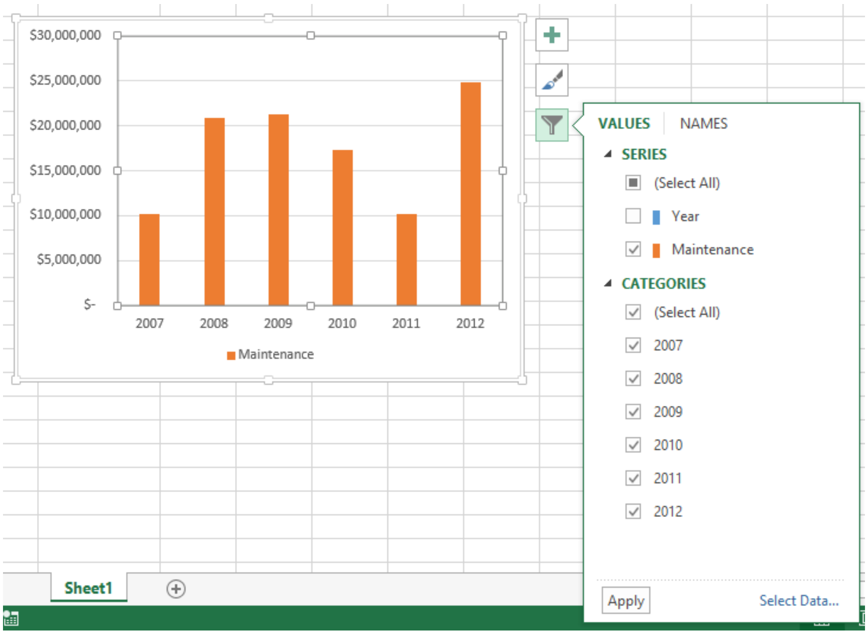
After you select the chart element, you can drag one of the element's handles to resize the element or drag the element to another location within the chart. To change the chart element's format, use the tools and dialog box launchers in the Shape Styles, Word Art Styles, Arrange, and Size groups on the Format tab to change the element's appearance. You can also select the chart element and then, on the Format tab, in the Current Selection group, click Format Selection to display a Format pane that you can use to change the chart element's appearance.



9

You can also display a similar set of formatting controls for a chart element by clicking the Chart Elements action button, pointing to the name of the element you want to change, clicking the right-pointing triangle that appears, and then clicking More Options. Doing so displays the pane related to that element.

With the third action button, Chart Filters, you can focus on specific data in your chart. Clicking the Chart Filters action button displays a filter interface that is very similar to that used to limit the data displayed in an Excel table.



Selecting or clearing a check box displays or hides data related to a specific value within a series, which you can select as well.

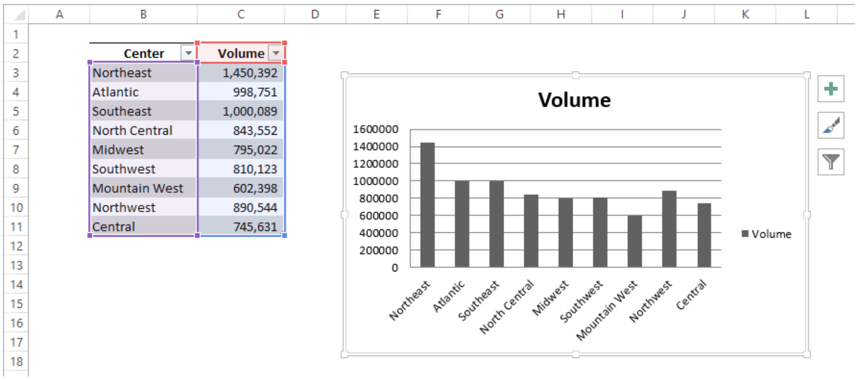
If you think you want to apply the same set of changes to charts you'll create in the future, you can save your chart as a chart template. When you select the data that you want to summarize visually and apply the chart template, you'll create consistently formatted charts in a minimum of steps. To save a chart as a chart template, right-click the chart and then click Save As Template. Use the controls in the dialog box that opens to name and save your template. Then, to create a chart based on that template, select the data that you want to summarize and on the Insert tab, in the Charts group, click the dialog box launcher in the lower-right corner of the group to open the Insert Chart dialog box. On the All Charts tab, click Templates, click the template you want to use, and then click OK.

TIP You can apply a template to an existing chart by selecting the chart and then, on the Design tab, in the Type group, clicking Change Chart Type to open the Change Chart Type dialog box. Click Templates, click the template you want to use, and then click OK.

In this exercise, you'll change a chart's layout, apply a new Chart Style, change the number format of the values on the vertical axis, save the chart as a chart template, and apply the template to another chart.

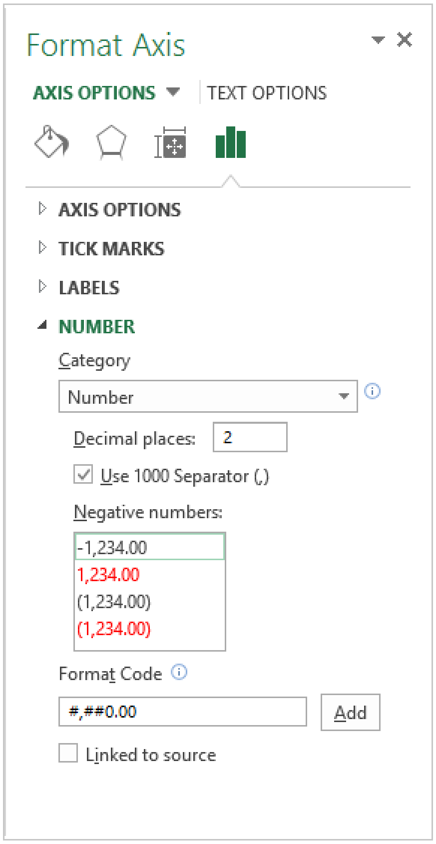
SET UP **You need the VolumeByCenter workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. On the **Presentation** worksheet, select the chart.
2. On the **Design** tab, in the **Chart Layouts** group, click **Quick Layouts**, and then click the first chart layout **Layout 1**.



3. To the right of the chart, click the **Chart Styles** action button to display the **Chart Styles** gallery.
4. Click **Style 7** to change the chart's style.
5. Click the **Chart Styles** action button to hide the **Chart Styles** gallery.
6. Click the **Chart Elements** action button, point to the **Axes** entry, click the right-pointing triangle that appears, and then click **More Options** to display the **Format Axis** pane.
7. In the pane, click **Axis Options**, and then click **Vertical (Value) Axis**.
8. Click **Number** to display the **Number** options in the **Format Axis** pane.
9. In the **Category** list, click **Number** to display the **Number** category's style options.

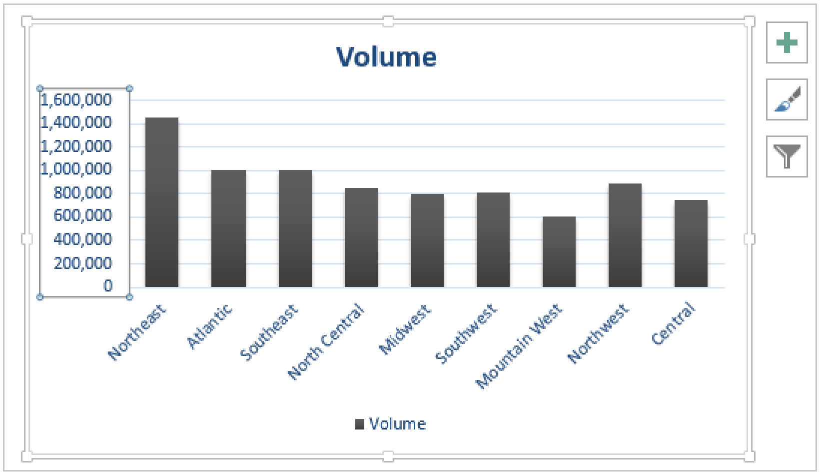
9



10 In the **Decimal places** field, enter **0**.

11 If necessary, select the **Use 1000 Separator (,)** check box.

12 Click the pane's **Close button**. Excel closes the pane and updates the chart's appearance.



13 Right-click the chart and then click **Save As Template** to open the **Save Chart Template** dialog box.

14 In the **File name** field, enter **Cool Blue**.

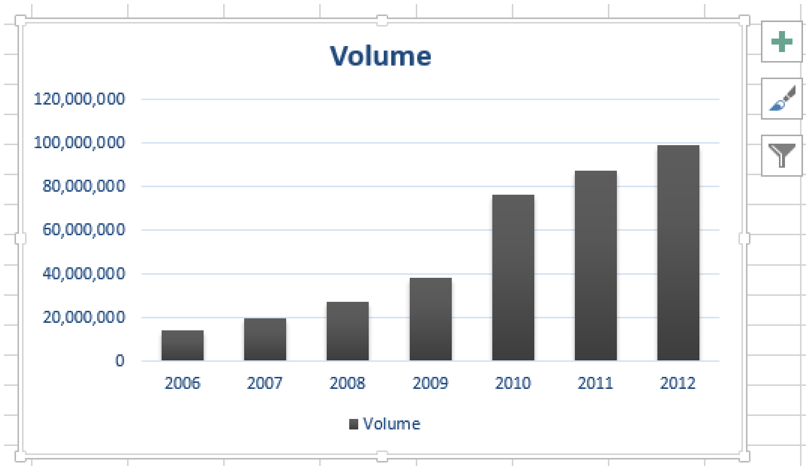
15 Click **Save** to save your template.

16 On the tab bar, click the **Yearly Summary** sheet tab to display the **Yearly Summary** worksheet.

17 Select the chart and then, on the **Design** tab, in the **Type** group, click **Change Chart Type** to open the **Change Chart Type** dialog box.

18 Click **Templates** to display the **My Templates** list.

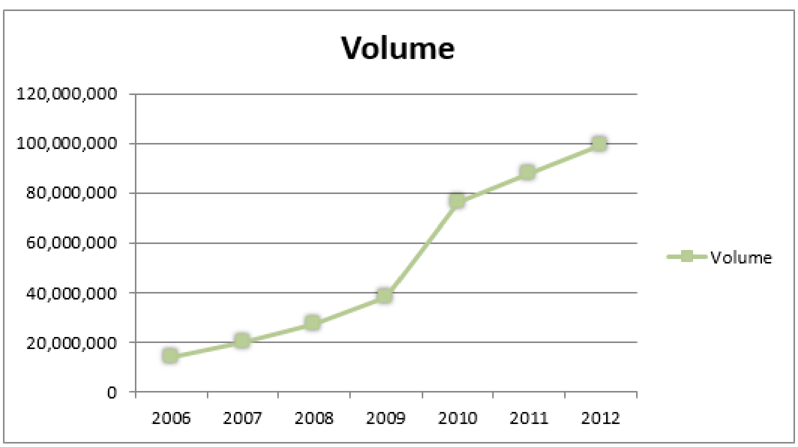
19 Click the **Cool Blue** custom template, and then click **OK** to apply the template to your chart.



CLEAN UP **Close the VolumeByCenter workbook, saving your changes if you want to.**

Finding trends in your data

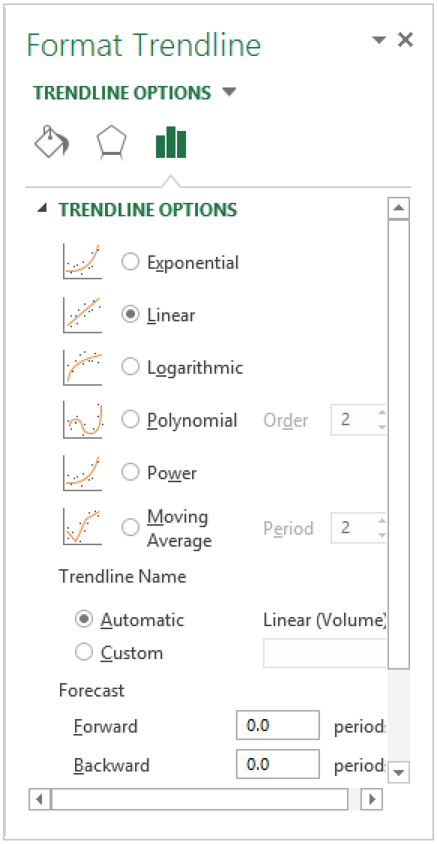
You can use the data in Excel workbooks to discover how your business has performed in the past, but you can also have Excel make its best guess—for example, as to future shipping revenues if the current trend continues. Consider a graph that shows the fleet maintenance costs for the years 2006 through 2012 for Consolidated Messenger.



The total has increased from 2006 to 2012, but the growth hasn't been uniform, so guessing how much maintenance costs would increase if the overall trend continued would require difficult mathematical computations. Fortunately, Excel can perform that

math. To have Excel project future values in the maintenance costs data series, click the chart, click the Chart Elements action button, point to Trendline, click the right-pointing triangle that appears, and then click More Options to display the Format Trendline pane.

On the Trendline Options page of the Format Trendline pane, you can choose the data distribution that Excel should expect when it makes its projection.



TIP If you don't know which distribution to choose, use Linear, which applies to most business data. The other distributions are used for scientific and engineering applications and you will most likely know, or be told by a colleague, when to use them.

After you choose the distribution type, you can tell Excel how far ahead to project the data trend. The horizontal axis of the chart used in this example shows revenues by year from 2006 to 2012. To tell Excel how far in the future to look, enter a number in the Forecast area's Forward box. In this case, to look ahead one year, enter *1* in the Forward box, and then click OK to add the trendline to the chart.

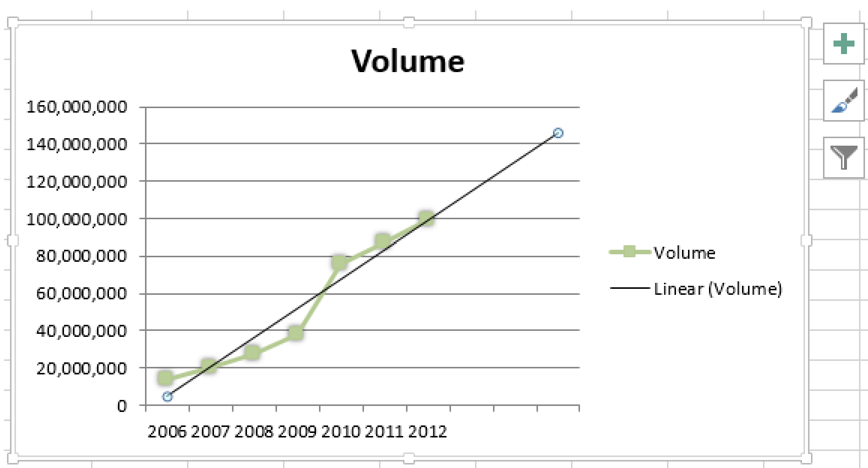
TIP When you click the Trendline button in the Analysis group, one of the options Excel displays is Linear Forecast Trendline, which adds a trendline with a two-period forecast.

As with other chart elements, you can double-click the trendline to open a formatting dialog box and change the line's appearance.

In this exercise, you'll add a trendline to a chart.

SET UP **You need the FutureVolumes workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. Select the chart.
2. Click the **Chart Elements** action button, point to **Trendline**, click the right-pointing triangle that appears, and then click **More Options**. The **Format Trendline** pane appears.
3. If necessary, in the **Trend/Regression Type** area, click **Linear**.
4. In the **Forecast** area, in the **Forward** field, enter **3**.
5. Click the pane's **Close button** to add the trendline to the chart.



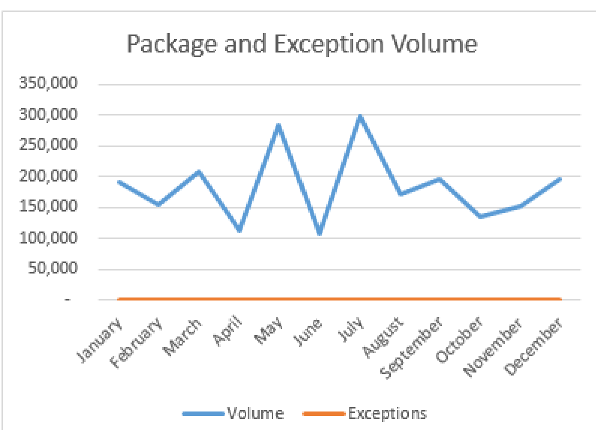
CLEAN UP **Close the FutureVolumes workbook, saving your changes if you want to.**

Creating dual-axis charts

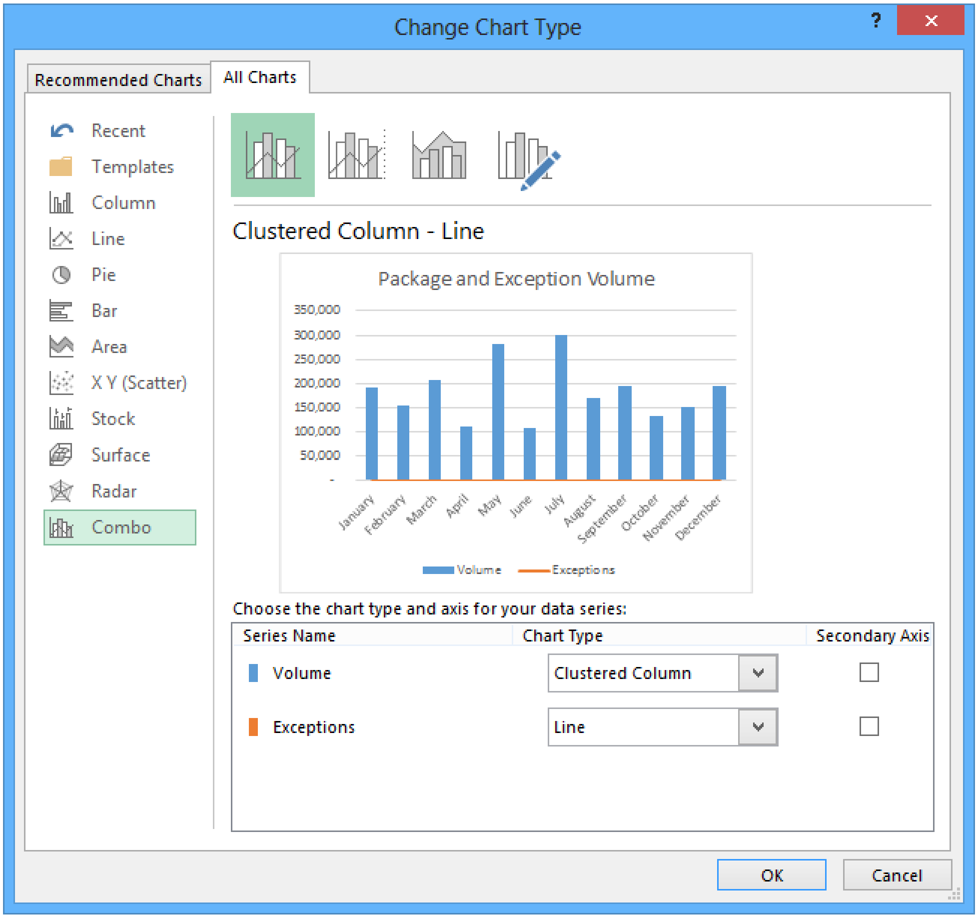
The Excel 2013 charting engine provides you with the flexibility to plot more than one data series, even if the series use two different scales. For example, Consolidated Messenger might track seasonal package volumes for each regional distribution center by category and, as part of the same data collection, track the number of improperly routed packages.

	A	B	C
1	Month	Volume	Exceptions
2	January	191,442	45
3	February	155,371	31
4	March	207,614	41
5	April	111,977	31
6	May	283,284	29
7	June	109,175	39
8	July	298,858	37
9	August	170,936	47
10	Septembe	195,520	39
11	October	134,432	34
12	Novembe	150,993	23
13	Decembe	195,378	21
14			

When you have two differing but related data series in a table, you can summarize the data by using a dual-axis chart. To create a dual-axis chart, click any cell in the data you want to chart and then, on the Insert tab, click the type of chart you want to create. When you do, Excel plots both data series by using that chart type.

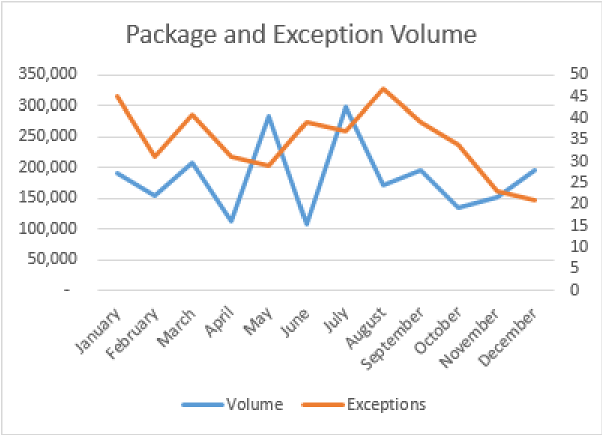


You can plot these two data series using separate axes by creating a combo chart. To do that, click the chart and then, on the Design tool tab, click Change Chart Type to display the dialog box of the same name. In the Change Chart Type dialog box, click the All Charts tab, and then click Combo to display the Combo charts page.



You can now use the controls in the Choose The Chart Type And Axis For Your Data Series area of the dialog box to select how to plot each series. To choose how to format a series, click the Chart Type arrow for that series and select its chart type. If you want the series to be plotted in relation to the values on the left vertical axis, leave the Secondary Axis check box cleared. To have the series plotted in relation to the values on the right vertical axis, select the Secondary Axis check box.

When you click OK, Excel creates your chart.



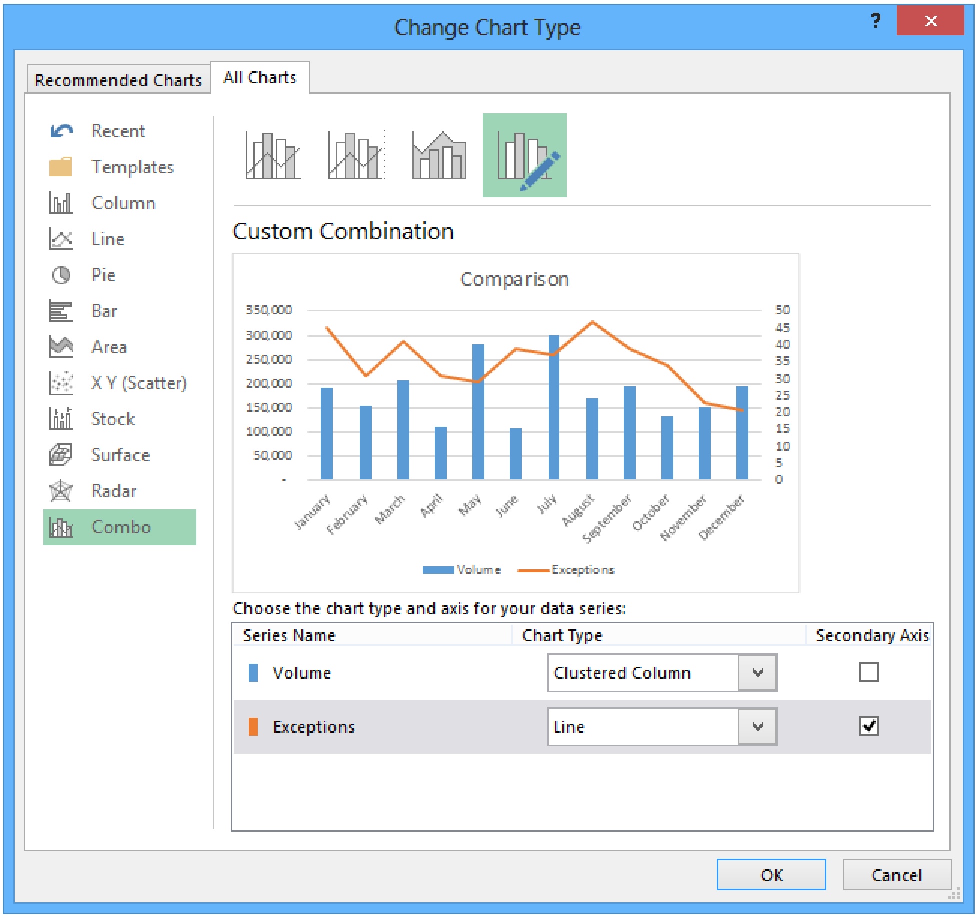
IMPORTANT Dual-axis charts that plot series with widely separated values can be visually deceiving. Be sure to read them carefully.

In this exercise, you'll create a dual-axis chart.

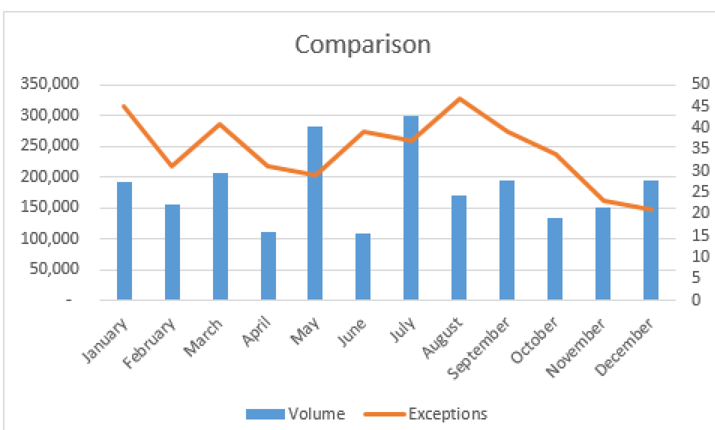
SET UP **You need the DualAnalysis workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. Click any cell in the Excel table.
2. Click the **Insert** tab and then, in the **Charts** group, click the **Insert Column Chart** button and click the first **2D Column** chart subtype, **Clustered Column**. When you do, Excel creates a chart with the two data series.
3. Right-click the **Chart Title** text box and click **Edit Text**. Enter **Comparison** for the chart title.
4. On the **Design** tool tab, click the **Change Chart Type** button to open the **Change Chart Type** dialog box.
5. If necessary, click the **All Charts** tab to display that page of the dialog box. Then, in the list of chart types, click **Combo** to display the **Combo Chart** interface.
6. Verify that the **Volume** series will be plotted by using a **Clustered Column** chart and that the **Exceptions** series will be plotted by using a **Line** chart.
7. Select the **Secondary Axis** check box next to the **Exceptions** series. Doing so adds a second vertical axis to the right edge of the chart. The values on this axis reflect the values in the **Exceptions** series.

9



8 Click **OK** to create the chart.



CLEAN UP **Close the DualAnalysis workbook, saving your changes if you want to.**

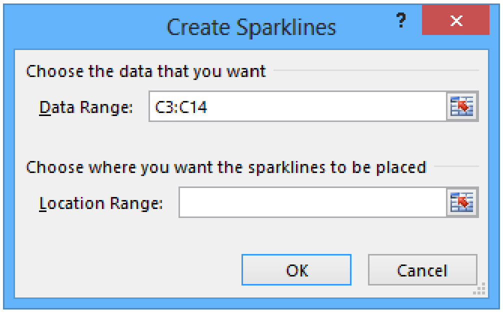
Summarizing your data by using sparklines

You can create charts in Excel workbooks to summarize your data visually by using legends, labels, and colors to highlight aspects of your data. It is possible to create very small charts to summarize your data in an overview worksheet, but you can also use *sparklines* to create compact, informative charts that provide valuable context for your data.

Edward Tufte introduced sparklines in his book *Beautiful Evidence* (Graphics Press, 2006), with the goal of creating charts that imparted their information in approximately the same space as a word of printed text. In Excel, a sparkline occupies a single cell, which makes it ideal for use in summary worksheets. As an example, suppose Lori Penor wanted to summarize the monthly revenue data for one of Consolidated Messenger's local branches.

	A	B	C	D	E	F
1						
2		Month	Revenue	Target	Difference	
3		January	$1,538,468	$1,600,000	$ (61,532)	
4		February	$1,474,289	$1,600,000	$ (125,711)	
5		March	$1,416,242	$1,600,000	$ (183,758)	
6		April	$1,685,377	$1,600,000	$ 85,377	
7		May	$1,573,046	$1,600,000	$ (26,954)	
8		June	$1,979,077	$1,600,000	$ 379,077	
9		July	$1,600,000	$1,600,000	$ -	
10		August	$2,417,226	$1,600,000	$ 817,226	
11		September	$1,872,026	$1,600,000	$ 272,026	
12		October	$2,097,478	$1,600,000	$ 497,478	
13		November	$2,876,025	$2,750,000	$ 126,025	
14		December	$3,825,430	$4,000,000	$ (174,570)	
15						

Lori can create three types of sparklines: line, column, and win/loss. The line and column sparklines are compact versions of the standard line and column charts. The win/loss sparkline indicates whether a cell value is positive (a win), negative (a loss), or zero (a tie). To create a line sparkline, you select the data you want to summarize and then, on the Insert tab, in the Sparklines group, click the Line button. When you do, Excel displays the Create Sparklines dialog box.



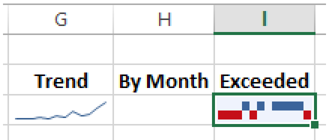
The data range you selected appears in the Data Range box. If the data range is not correct, you can click the Collapse Dialog button to the right of the Data Range box, select the correct cells, and then click the Expand Dialog button. Then, in the Location Range box, enter the address of the cell into which you want to place your sparkline. When you click OK, Excel creates a line sparkline in the cell you specified.

B	C	D	E	F	G	H
Month	**Revenue**	**Target**	**Difference**		**Trend**	**By Month**
January	$1,538,468	$1,600,000	$ (61,532)			
February	$1,474,289	$1,600,000	$ (125,711)			
March	$1,416,242	$1,600,000	$ (183,758)			
April	$1,685,377	$1,600,000	$ 85,377			
May	$1,573,046	$1,600,000	$ (26,954)			
June	$1,979,077	$1,600,000	$ 379,077			
July	$1,600,000	$1,600,000	$ -			
August	$2,417,226	$1,600,000	$ 817,226			
September	$1,872,026	$1,600,000	$ 272,026			
October	$2,097,478	$1,600,000	$ 497,478			
November	$2,876,025	$2,750,000	$ 126,025			
December	$3,825,430	$4,000,000	$ (174,570)			

You follow the same basic procedure to create a column sparkline, except that instead of clicking the Line button in the Sparklines group on the Insert tab, you click the Column button. To create a win/loss sparkline, you need to ensure that your data contains, or could contain, both positive and negative values. If you measured monthly revenue for

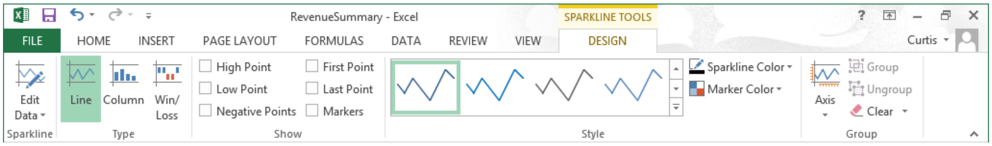
Consolidated Messenger, every value would be positive and the win/loss sparkline would impart no meaningful information. Comparing revenue to revenue targets, however, could result in positive, negative, or tie values, which can be meaningfully summarized by using a win/loss sparkline.

To create a win/loss sparkline, follow the same data selection process and click the Win/Loss button.



Months in which Consolidated Messenger's branch exceeded its revenue target appear in the top half of the cell in blue, months in which the branch fell short of its target appear in the bottom half of the cell in red, and the month in which the revenue was exactly the same as the target is blank.

After you create a sparkline, you can change its appearance. Because a sparkline takes up the entire interior of a single cell, resizing that cell's row or column resizes the sparkline. You can also change a sparkline's formatting. When you click a sparkline, Excel displays the Design tool tab.



9

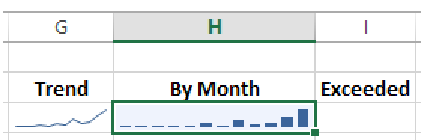
You can use the tools on the Design tool tab to select a new style; show or hide value markers; change the color of your sparkline or the markers; edit the data used to create the sparkline; modify the labels on the sparkline's axes; or group, ungroup, or clear sparklines. You can't delete a sparkline by clicking its cell and then pressing the Delete or Backspace key—you must click the cell and then, on the Design tool tab, click the Clear button.

TIP Remember that sparklines work best when displayed in compact form. If you find yourself adding markers and labels to a sparkline, you might consider using a regular chart to take advantage of its wider range of formatting and customization options.

In this exercise, you'll create a line, column, and win/loss sparkline, change the sparkline's formatting, and clear a sparkline from a cell.

SET UP **You need the RevenueSummary workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. Select the cell range **C3:C14**.
2. On the **Insert** tab, in the **Sparklines** group, click **Line** to open the **Create Sparklines** dialog box.
3. Verify that **C3:C14** appears in the **Data Range** box. Then, in the **Location Range** box, enter **G3** and click **OK**. Excel creates a line sparkline in cell **G3**.
4. Select the cell range **C3:C14**.
5. On the **Insert** tab, in the **Sparklines** group, click **Column**. The **Create Sparklines** dialog box opens again.
6. Verify that **C3:C14** appears in the **Data Range** box. Then, in the **Location Range** box, enter **H3** and click **OK**. Excel creates a column sparkline in cell **H3**.
7. Drag the right edge of the column **H** header to the right until the cell's width is approximately doubled. Excel displays more details in the sparkline.



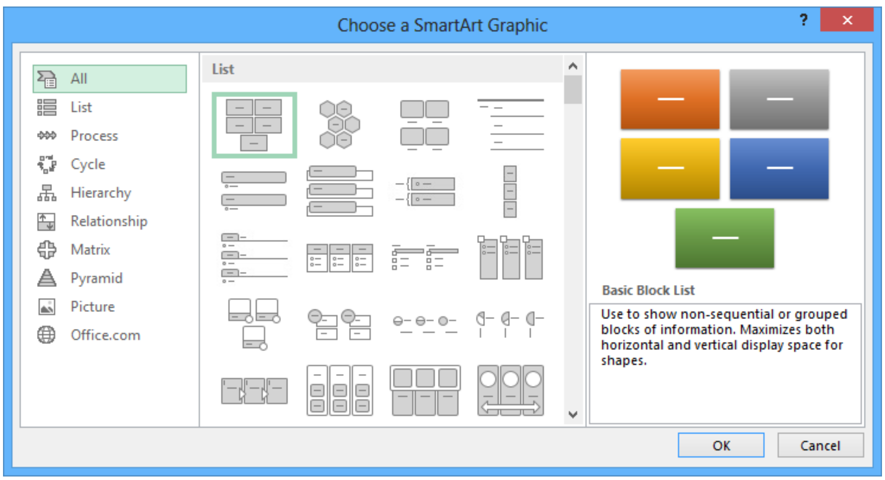
8. Select the cell range **E3:E14**.
9. On the **Insert** tab, in the **Sparklines** group, click **Win/Loss**. The **Create Sparklines** dialog box opens again.
10. Verify that **E3:E14** appears in the **Data Range** box. Then, in the **Location Range** box, enter **I3** and click **OK**. Excel creates a win/loss sparkline in cell **I3**.
11. With cell **I3** still selected, on the **Design** tool tab, in the **Style** gallery, click the right-most sparkline style. Excel changes the win/loss sparkline's appearance.

12 Click cell **G3** and then, on the **Design** tool tab, in the **Group** group, click the **Clear** button and then click **Clear Selected Sparkline**. The sparkline disappears.

CLEAN UP **Close the RevenueSummary workbook, saving your changes if you want to.**

Creating diagrams by using SmartArt

As an international delivery company, Consolidated Messenger's business processes are quite complex. Many times, chief operating officer Lori Penor summarizes the company's processes for the board of directors by creating diagrams. Excel has just the tool she needs to create those diagrams: SmartArt. To create a SmartArt graphic, on the Insert tab, in the Illustrations group, click SmartArt to display the Choose A SmartArt Graphic dialog box.



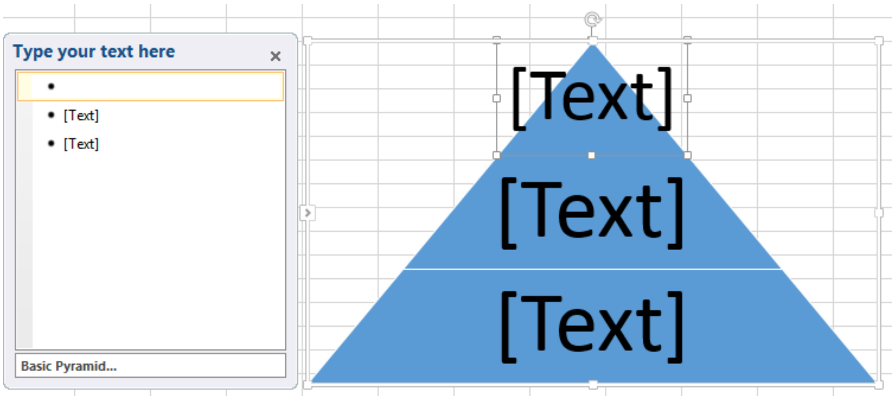
When you click one of the thumbnails in the center pane of the Choose A SmartArt Graphic dialog box, Excel displays a description of the diagram type you selected in the rightmost pane of the dialog box. Clicking All displays every available SmartArt graphic type. The following table lists the types of diagrams you can create by using the Choose A SmartArt Graphic dialog box.

TIP The Office.com category contains SmartArt diagrams available online through Office.com.

Diagram	Description
List	Shows a series of items that typically require a large amount of text to explain
Process	Shows a progression of sequential steps through a task, process, or workflow
Cycle	Shows a process with a continuous cycle or relationships of core elements
Hierarchy	Shows hierarchical relationships, such as those within a company
Relationship	Shows the relationships between two or more items
Matrix	Shows the relationship of components to a whole by using quadrants
Pyramid	Shows proportional, foundation-based, or hierarchical relationships such as a series of skills
Picture	Shows one or more images with captions

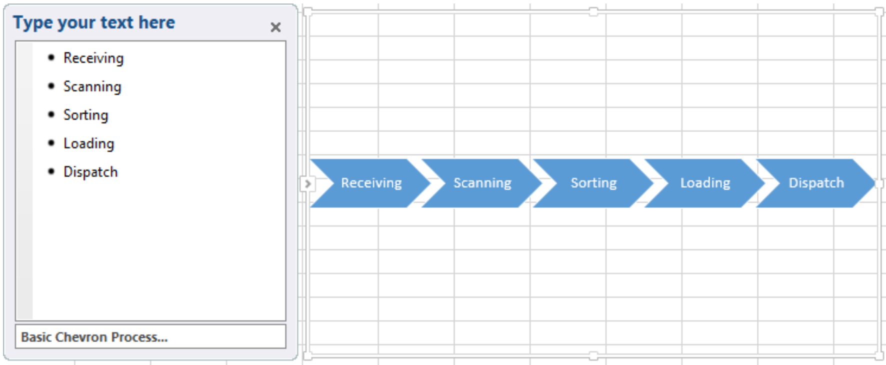
TIP Some of the diagram types can be used to illustrate several types of relationships. Be sure to examine all your options before you decide on the type of diagram to use to illustrate your point.

After you click the button that represents the type of diagram you want to create, click OK to add the diagram to your worksheet.



While the diagram is selected, Excel displays the Design and Format tool tabs. You can use the tools on the Design tool tab to change the graphic's layout, style, or color scheme. The Design tool tab also contains the Create Graphic group, which is home to tools you can use to add a shape to the SmartArt graphic, add text to the graphic, and promote or demote shapes within the graphic.

As an example, consider a process diagram that describes how Consolidated Messenger handles a package within one of the company's regional distribution centers.



In the text pane, located to the left of the SmartArt graphic, you can add text to a shape without having to click and type within the shape. If you enter the process steps in the wrong order, you can move a shape by right-clicking the shape you want to move and then clicking Cut on the shortcut menu that appears. To paste the shape back into the graphic, right-click the shape to the left of where you want the pasted shape to appear, and then click Paste. For example, if you have a five-step process and accidentally switch the second and third steps, you can move the third step to the second position by right-clicking the third step, clicking Cut, right-clicking the first shape, and then clicking Paste.

If you want to add a shape to a SmartArt graphic, to add a step to a process, for instance, click a shape next to the position you want the new shape to occupy and then, on the Design tool tab, in the Create Graphic group, click Add Shape, and then click the option that represents where you want the new shape to appear in relation to the selected shape.

TIP The options that appear when you click Add Shape depend on the type of SmartArt graphic you created and which graphic element is selected. For instance, the options for an organizational chart are Add Shape After, Add Shape Before, Add Shape Above, Add Shape Below, and Add Assistant.

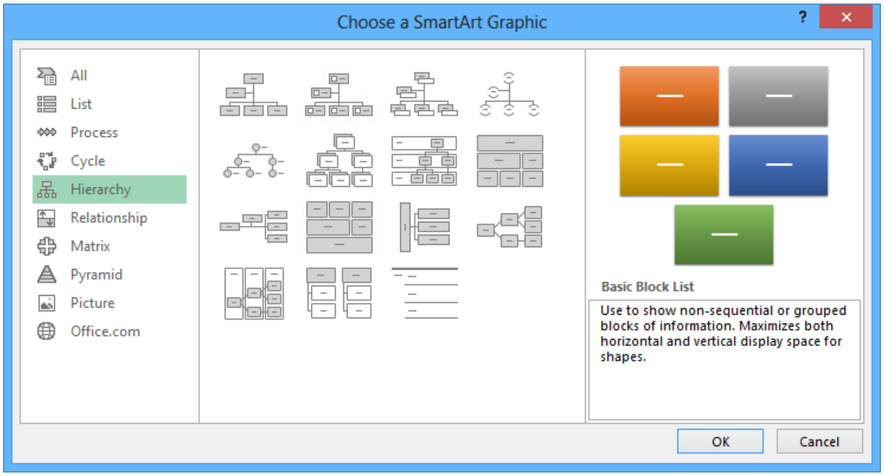
You can edit the graphic's elements by using the buttons on the Format tool tab or by right-clicking the shape and then clicking Format Shape to display the Format Shape pane. If you have selected the text in a shape, you can use the tools in the Font group on the Home tab to change the text's appearance.

TIP You can use the controls in the Format Shape dialog box to change the shape's fill color, borders, shadow, three-dimensional appearance, and text box properties.

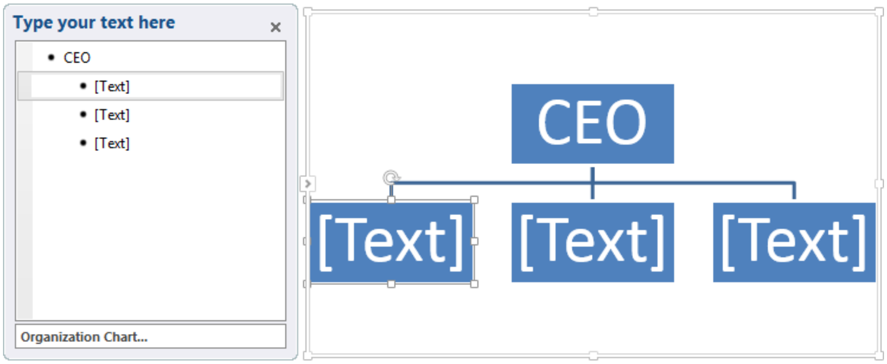
In this exercise, you'll create an organization chart, fill in the shapes, delete a shape, add a shape, change the layout of the diagram without changing the information it embodies, and change the formatting of one of the diagram elements.

SET UP **You need the OrgChart workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

1. On the **Insert** tab, in the **Illustrations** group, click **SmartArt** to open the **Choose a SmartArt Graphic** dialog box.
2. Click **Hierarchy** to display the **Hierarchy** graphic subtypes.



3. Click the first subtype (**Organization Chart**), and then click **OK**. Excel creates the organization chart graphic.
4. In the **Type your text here** pane, in the first text box, enter **CEO**, and then press the **Down Arrow** key. The value *CEO* appears in the shape at the top level of the organization chart.
5. In the SmartArt diagram, right-click the assistant box, located below and to the left of the **CEO** shape, and then click **Cut**. Excel removes the shape and moves the shapes on the third level of the organization chart to the second level.



6 Click the leftmost shape on the second level of the organization chart, and then enter **COO**.

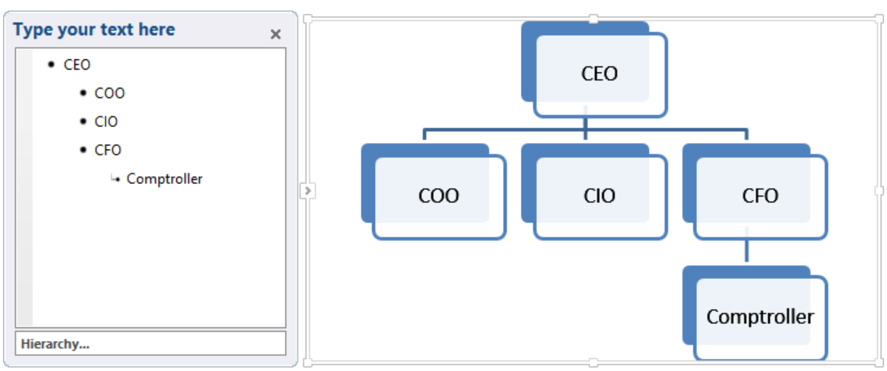
7 Click the middle shape on the second level of the organization chart, and then enter **CIO**.

8 Click the rightmost shape on the second level of the organization chart, and then enter **CFO**.

9 Click the **CFO** shape. On the **Design** tool tab, in the **Create Graphic** group, in the **Add Shape** list, click **Add Shape Below**. A new shape appears below the **CFO** shape.

10 In the new shape, type **Comptroller**.

11 On the **Design** tool tab, in the **Layouts** group, click the second layout from the left on the second line of layouts. Excel applies the new layout to your organization chart.



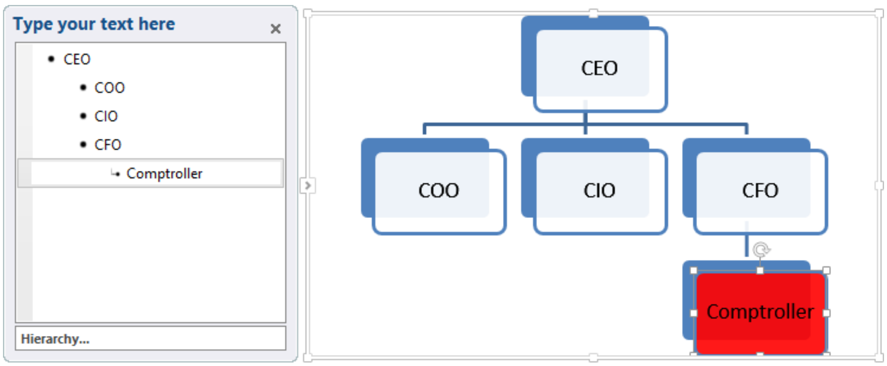
9

12 Right-click the **Comptroller** shape, and then click **Format Shape** to display the **Format Shape** pane.

13 If necessary, click the **Fill** category to display the fill options.

14 Verify that the **Solid fill** option is selected, click the **Color** button and then, in the **Standard Colors** area of the color picker, click the red swatch.

15 Click **Close**. Excel changes the shape's fill to red.

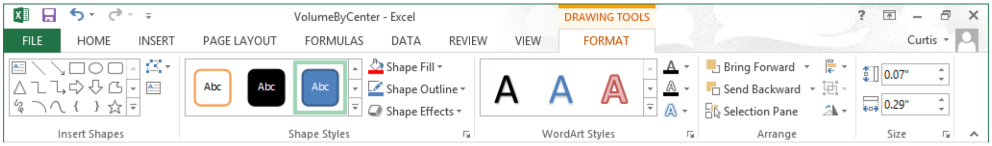


CLEAN UP **Close the OrgChart workbook, saving your changes if you want to.**

Creating shapes and mathematical equations

With Excel, you can analyze your worksheet data in many ways, including summarizing your data and business processes visually by using charts and SmartArt. You can also augment your worksheets by adding objects such as geometric shapes, lines, flowchart symbols, and banners.

To add a shape to your worksheet, click the Insert tab and then, in the Illustrations group, click the Shapes button to display the shapes available. When you click a shape in the gallery, the pointer changes from a white arrow to a thin black crosshair. To draw your shape, click anywhere in the worksheet and drag the pointer until your shape is the size you want. When you release the mouse button, your shape appears and Excel displays the Format tool tab on the ribbon.



TIP Holding down the Shift key while you draw a shape keeps the shape's proportions constant. For example, clicking the Rectangle tool and then holding down the Shift key while you draw the shape causes you to draw a square.

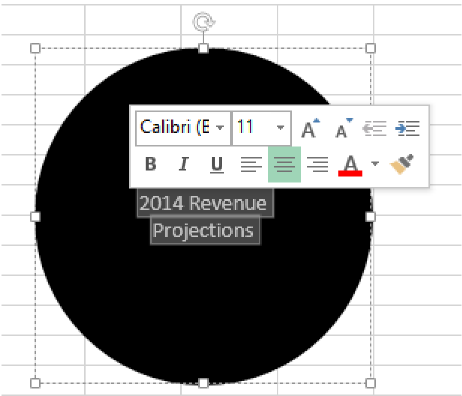
You can resize a shape by clicking the shape and then dragging one of the resizing handles around the edge of the shape. You can drag a handle on a side of the shape to drag that side to a new position; when you drag a handle on the corner of the shape, you affect height and width simultaneously. If you hold down the Shift key while you drag a shape's corner, Excel keeps the shape's height and width in proportion. To rotate a shape, select the shape and then drag the white rotation handle at the top of the selection outline in a circle until the shape is in the orientation you want.

TIP You can assign your shape a specific height and width by clicking the shape and then, on the Format tool tab, in the Size group, entering the values you want in the height and width boxes.

After you create a shape, you can use the controls on the Format tool tab to change its formatting. To apply a predefined style, click the More button in the lower-right corner of the Shape Styles group's gallery and then click the style you want to apply. If none of the predefined styles are exactly what you want, you can use the Shape Fill, Shape Outline, and Shape Effects options to change those aspects of the shape's appearance.

TIP When you point to a formatting option, such as a style or option displayed in the Shape Fill, Shape Outline, or Shape Effects lists, Excel displays a live preview of how your shape would appear if you applied that formatting option. You can preview as many options as you like before committing to a change. If a live preview doesn't appear, click the File tab to display the Backstage view and then click Options to open the Excel Options dialog box. On the General page, select the Enable Live Preview check box and click OK.

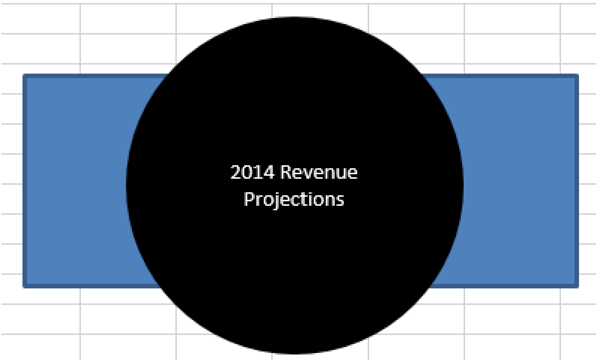
If you want to use a shape as a label or header in a worksheet, you can add text to the shape's interior. To do so, select the shape and begin typing; when you're done adding text, click outside the shape to deselect it. You can edit a shape's text by moving the pointer over the text. When the pointer is in position for you to edit the text, it will change from a white pointer with a four-pointed arrow to a black I-bar. You can then click the text to start editing it. If you want to change the text's appearance, you can use the commands on the Home tab or on the Mini Toolbar that appears when you select the text.



You can move a shape within your worksheet by dragging it to a new position. If your worksheet contains multiple shapes, you can align and distribute them within the worksheet. Horizontal shape alignment means that the shapes are lined up by their top edge, bottom edge, or center. Vertical shape alignment means that they have the same right edge, left edge, or center. To align a series of shapes, hold down the Ctrl key and click the shapes you want to align. Then, on the Format tool tab, in the Arrange group, click Align, and then click the alignment option you want.

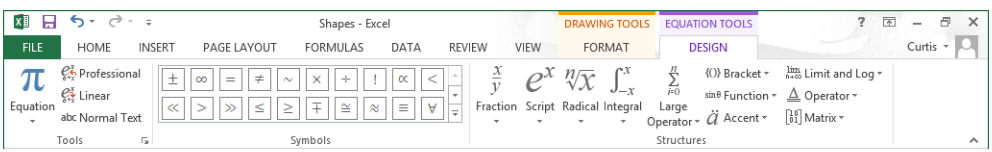
Distributing shapes moves the shapes so they have a consistent horizontal or vertical distance between them. To do so, select three or more shapes on a worksheet, click the Format tool tab and then, in the Arrange group, click Align and then click either Distribute Horizontally or Distribute Vertically.

If you have multiple shapes on a worksheet, you will find that Excel arranges them from front to back, placing newer shapes in front of older shapes.



To change the order of the shapes, select the shape in the back, click the Format tool tab, and then, in the Arrange group, click Bring Forward. When you do, Excel moves the back shape in front of the front shape. Clicking Send Backward has the opposite effect, moving the selected shape one layer back in the order. If you click the Bring Forward arrow, you can choose to bring a shape all the way to the front of the order; similarly, when you click the Send Backward arrow, you can choose to send a shape to the back of the order.

One other way to work with shapes in Excel is to add mathematical equations to their interior. As an example, a business analyst might evaluate Consolidated Messenger's financial performance by using a ratio that can be expressed with an equation. To add an equation to a shape, click the shape and then, on the Insert tab, in the Symbols group, click Equation, and then click the Design tool tab to display the interface for editing equations.



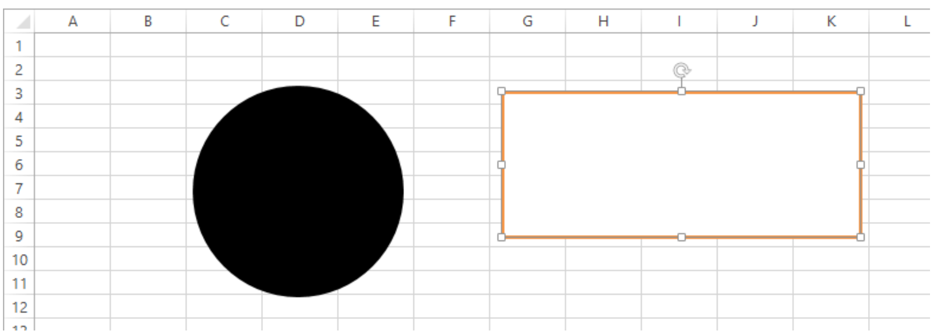
TIP Clicking the Equation arrow displays a list of common equations, such as the Pythagorean Theorem, that you can add with a single click.

Click any of the controls in the Structures group to begin creating an equation of that type. You can fill in the details of a structure by adding text normally or by adding symbols from the gallery in the Symbols group.

In this exercise, you'll create a circle and a rectangle, change the shapes' formatting, reorder the shapes, align the shapes, add text to the circle, and then add an equation to the rectangle.

SET UP **You need the Shapes workbook located in the Chapter09 practice file folder to complete this exercise. Open the workbook, and then follow the steps.**

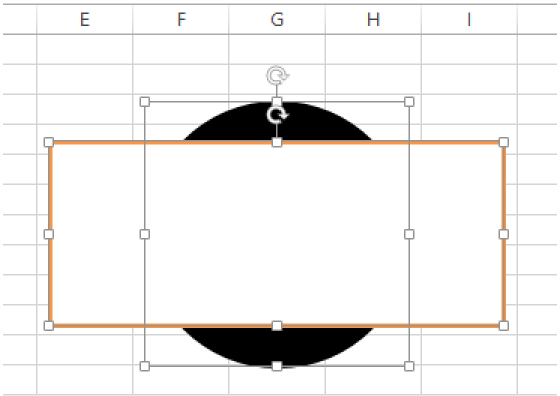
1. On the **Insert** tab, in the **Illustrations** group, click the **Shapes** button, and then click the oval. The pointer changes to a thin black crosshair.
2. Starting near cell **C3**, hold down the **Shift** key and drag the pointer to approximately cell **E9**. Excel draws a circle.
3. On the **Format** tool tab, in the **Shapes Styles** group's gallery, click the second style. Excel formats the shape with white text and a black background.
4. On the **Insert** tab, in the **Illustrations** group, click the **Shapes** button, and then click the rectangle shape. The pointer changes to a thin black crosshair.
5. Starting near cell **G3**, drag the pointer to cell **K9**. Excel draws a rectangle.
6. On the **Format** tool tab, in the **Shapes Styles** group's gallery, click the first style. Excel formats the shape with black text, an orange border, and a white background.



7. Click the circle and enter **2014 Revenue Projections**. Then, on the **Home** tab, in the **Alignment** group, click the **Middle Align** button. Excel centers the text vertically within the circle.
8. On the **Home** tab, in the **Alignment** group, click the **Center** button. Excel centers the text horizontally within the circle.

9 Hold down **Ctrl** and click the circle and the rectangle. Then, on the **Format** tool tab, in the **Arrange** group, click the **Align Objects** button, and then click **Align Center**. Excel centers the shapes horizontally.

10 Without releasing the selection, on the **Format** tool tab, in the **Arrange** group, click the **Align Objects** button, and then click **Align Middle**. Excel centers the shapes vertically.



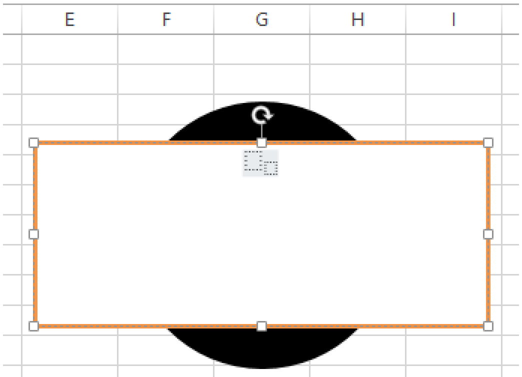
11 Click any spot on the worksheet outside of the circle and rectangle to release the selection, and then click the rectangle.

12 On the **Format** tool tab, in the **Arrange** group, click **Send Backward**. Excel moves the rectangle behind the circle.

13 Press **Ctrl+Z** to undo the last action. Excel moves the rectangle in front of the circle.

14 Click anywhere on the worksheet except on the circle or the rectangle. Click the rectangle and then, on the **Insert** tab, in the **Symbols** group, click **Equation**. The text **Type Equation Here** appears in the rectangle.

15 On the **Design** tool tab, in the **Structures** group, click the **Script** button, and then click the **Subscript** structure (the second from the left in the top row). The **Subscript** structure's outline appears in the rectangle.



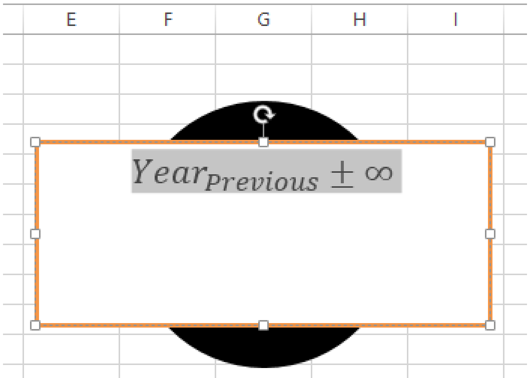
16 Click the left box of the structure and enter **Year**.

17 Click the right box of the structure and enter **Previous**.

18 Press the **Right Arrow** key once to move the cursor to the right of the word **Previous** and then, in the **Symbols** group's gallery, click the **Plus Minus** symbol (the first symbol in the top row).

19 In the **Symbols** group's gallery, click the **Infinity** symbol (the second symbol in the top row).

20 Select all of the text in the rectangle and then, on the **Home** tab, in the **Font** group, click the **Increase Font Size** button four times. Excel increases the equation text's font size.



CLEAN UP **Close the Shapes workbook, saving your changes if you want to.**

Key points

- You can use charts to summarize large sets of data in an easy-to-follow visual format.
- You're not stuck with the chart you create; if you want to change it, you can.
- If you format many of your charts the same way, creating a chart template can save you a lot of work in the future.
- Adding chart labels and a legend makes your chart much easier to follow.
- When you format your data properly, you can create dual-axis charts, which are compact and easy to read.
- If your chart data represents a series of events over time (such as monthly or yearly sales), you can use trendline analysis to extrapolate future events based on the past data.
- With sparklines, you can summarize your data in a compact space, providing valuable context for values in your worksheets.
- With Excel, you can quickly create and modify common business and organizational diagrams, such as organization charts and process diagrams.
- You can create and modify shapes to enhance your workbook's visual impact.
- The improved equation editing capabilities help Excel 2013 users communicate their thinking to their colleagues.

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